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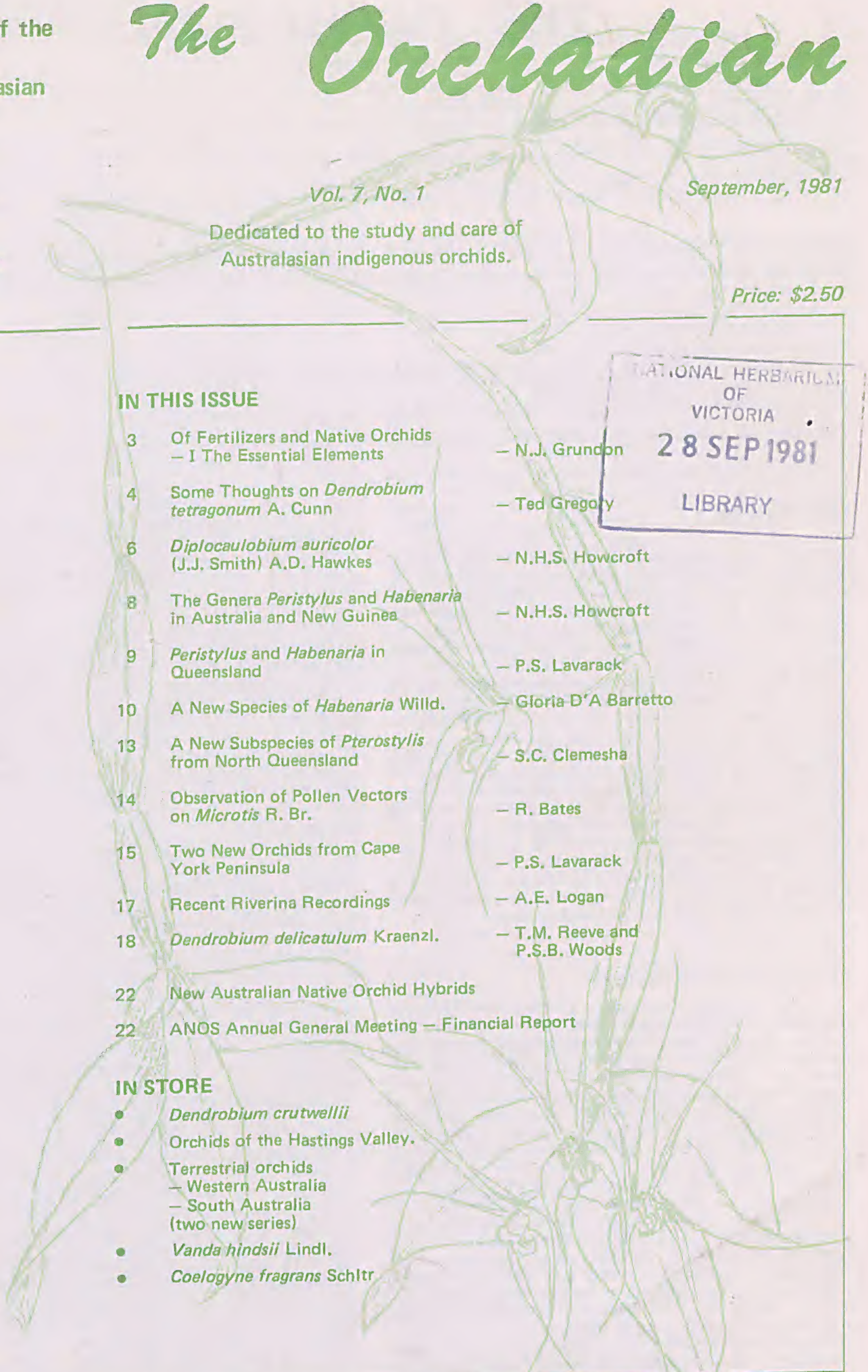

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EDITORIAL

On 22 August, 1981, ANOS Annual General Meeting brought some important changes. After a keenly contested election, Norman Hilliger was elected President of a Council comprising four completely new councillors (see "Who's Who" for full details of the new Council for 1981-2). Norm is well-known to members familiar with the annual spring show at Mona Vale. A former president of the Warringah Group, he was a prime mover in setting up and developing this annual ANOS event. Now in its seventh year, the "Mona Vale Show" is virtually an institution.

With this issue of *The Orchadian* readers receive a comprehensive index to Volume 6. Compiling this Index has revealed to me some interesting facts; for example that 14 descriptions of new taxa were published in *The Orchadian* in the past three years; that seven new books were critically reviewed; that at least 20 articles contained notes on orchid cultivation and that "Letters to the Editor" were far more than I had thought. Now that you have the Index, your access to references will be easier — especially if Volume 6 is bound in book form.

FEED-BACK AND FOLLOW-UP

- In my June editorial I invited comment from readers on what they wish to see in Volume 7. Predictably the few who have responded want more on cultivation of orchids. I had already explained my intentions on that score, so I was quite devastated when one Victorian reader, after referring to Papua New Guinea and New Zealand as (I quote) "outposts of Australiana", went on to say "you should get out to the various societies and clubs and hear what the rank and file member is interested in and not just cater for the scientific elite." Space does not allow me to publish the whole letter. It is sufficient to say I did not find it constructive.

To others who support this attitude I can only suggest that they read my June editorial again and try to appreciate the need to balance horticulture and botany. Meanwhile I console myself with the hope that the silent majority who have not commented are on my side. My sincere thanks go to those who offered much more constructive comments such as suggestions for a "Beginner's Section" on the basic year-round care of native orchids. Given a little time we should find a few writers who can do this.

- **THE 13th INTERNATIONAL BOTANICAL CONGRESS — ORCHID SYMPOSIUM** — lived up to all the promises in the publicity given to it by its organisers (the Orchid Society of N.S.W. and the Australian Orchid Foundation). Two full days of once-in-a-lifetime experience: international experts, interstate visitors, valuable contacts and never a dull moment. The undoubted star performer was Professor Joe Arditti from California. The "Proceedings of the Orchid Symposium" can be thoroughly recommended to all who could not attend. These papers, I believe, can be purchased from the O.S. N.S.W. They make up a colourful illustrated book full of the latest thinking on orchids — even to orchids in science fiction, as seen light-heartedly by the naughty Arditti. Only a synopsis of this session is given in the "Proceedings" but all other papers are fully presented. The co-editors, Len Lawler and Ron Kerr, are to be congratulated on this publication.

- Space will not permit me to do this Symposium full justice here. However, for selfish editorial reasons, I must quote something relevant to my worries (above) about balancing the content of *The Orchadian*. Professor R.E. Holttum delivered a keynote paper, "Orchids: Present and Future" and in it he referred to the importance of editors of orchid journals. It was the first time I had ever heard, in a discussion devoted to orchids, any reference to the existence of orchid editors — let alone their importance! So I quote: "Orchid journals are now published in many parts of the world, most of them dealing with horticultural questions. Contributors . . . are mostly not taxonomists and are sometimes liable to use wrong names unless these are checked . . . There are not enough orchid taxonomists in the world to supply the needs of *growers* and *breeders*" (my italics). By implication Professor Holttum was saying that there are not enough editors giving due emphasis to taxonomy in their journals and that this could result in dangerous confusion for the ("rank and file"?) growers and breeders in due course.

- Returning to the non-constructive letter, I would say that *The Orchadian* does emphasise taxonomy where appropriate; does present its articles to a botanical referee for checking; and does have a policy of presenting horticultural articles **whenever these are of sufficient quantity and quality.** *The Orchadian* is not a "bulletin", a "newsletter" or a monthly re-hash of snippets from elsewhere. These can be very good in their own way and you can get regular monthly notes by simply joining a Group or Society affiliated with ANOS, whether you can attend meetings or not.

OF FERTILIZERS AND NATIVE ORCHIDS – Part I: The Essential Elements

By Noel J. Grundon

Having trained and worked as a Plant Nutritionist for the last eighteen years, I am sometimes disturbed by the half-truths, incorrect or missinformed statements that are made in articles which appear in the public press or non-technical journals. I do not claim to have read all the literature dealing with fertilizers and orchids, nor to have a complete technical knowledge of the fertilizer requirements of our native orchids. But I can claim to have some knowledge and practical experience of the nutritional requirements of plants, the function of each nutrient in plants and the need for a balanced nutrient diet. In the following pages I hope to pass on a deeper understanding of the myths of fertilizer requirements of native orchids, in the process no doubt reopening old arguments but possibly throwing new light on old problems.

Orchids are members of the plant kingdom. You all know this but it seems that many people forget this essential fact as soon as fertilizer requirements of orchids are mentioned. A fact of the plant kingdom is that ALL members require the same sixteen elements to be able to grow vigorously and reproduce. And those elements perform essentially the same life-sustaining functions in ALL members of the plant kingdom. Decades of carefully conducted experiments have proved and re-proved these facts so often with so many different members of the plant kingdom, that when we have no or little knowledge of the requirements of one species, we can gain some idea of what to expect by looking at the requirements of related species. So to start . . . what are these sixteen elements and what are their functions in plants?

The elements are divided into two groups, the major or macro-nutrients and the minor of micro-nutrients. The major elements are carbon (C), hydrogen (H), oxygen (O), nitrogen (N), phosphorus (P), potassium (K), sulphur (S), calcium (Ca), and magnesium (Mg). The minor elements are iron (Fe), boron (B), copper (Cu), zinc (Zn), manganese (Mn), molybdenum (Mo) and chloride (Cl). Carbon, hydrogen and oxygen are obtained from the air and water, carbon from carbon dioxide, and hydrogen and oxygen from water. All the other essential elements must be taken up from the potting medium or the soil by the roots, unless supplied as a foliar fertilizer when small amounts of all these elements can be absorbed through the leaves. When foliar application is used, the element is absorbed mainly through the cuticle and epidermis of the upper surface of the leaf and not through the open stomates which occur mainly on the lower surface of the leaf.

The three elements taken up in greatest amounts are nitrogen, potassium and calcium. Phosphorus, sulphur and magnesium are required in amounts about one-tenth that of the first three elements. While the minor elements are just as important for plants to grow, they may be present at less than 1/10,000 of the amount of nitrogen.

NITROGEN is a constituent of amino acids, the building units of proteins. It is a part of chlorophyll and enzymes. As such, nitrogen has an over-riding effect on growth and a dominant effect on the uptake and utilization of the other nutrients. It is especially high in young tissues. A plant obtains its nitrogen requirements for young, growing tissues either by absorbing nitrate or ammonium from the potting medium, or by breaking down protein in older leaves and stems and retranslocating it as amino acids or amides to the young tissues. Proteins are broken down only when there is sufficient nitrate or ammonium in the potting medium. Plants usually prefer to absorb nitrate rather than ammonium and many plants grow poorly if too much of their nitrogen is supplied in the ammonium form.

PHOSPHORUS functions in the movement and storage of energy within the plant. Consequently, it has a controlling role in photosynthesis, the conversion of light energy into chemical energy as sugars and starch, and in the use of that energy through respiration, the breakdown of starch and sugars to carbon dioxide and water and releasing energy. It plays other important roles in cell division, protein formation, promotion of root growth and regulation of maturity. A large proportion of plant phosphorus is found in young tissues and seeds.

POTASSIUM is an enigma in plants. Although it is needed in large quantities, the details of its functions are vague and it is not a constituent of any known compound found in plants. It seems to perform many vital functions in cell organisation, membrane permeability, electrical balance within the cell, water relations, carbohydrate and nitrogen metabolism, and in photosynthesis. It allows many enzymes to function correctly, controls pH within the cell and is needed to open stomates.

CALCIUM is a structural element since most of the calcium in a plant is found in the cell walls which it appears to stiffen. It is important also in the growth of cells, the correct functioning of cell membranes and some enzymes, and the growth and functioning of roots. It helps to balance the toxic effects of excesses of other elements, particularly the minor elements. The concentration of calcium is highest in the older tissues.

MAGNESIUM is the central atom of every chlorophyll molecule; hence its prominant role and effect on photosynthesis where chlorophyll is used to collect the energy of sunlight. It is also an important activator of several enzymes.

SULPHUR is a constituent of many essential amino acids, and along with nitrogen is the only mineral element found in proteins. It is a part of several enzymes involved in photosynthesis, and the metabolism of carbohydrates and proteins.

IRON is essential for chlorophyll formation and is part of several important enzymes functioning in photosynthesis and converson of nitrate into amino acids.

MANGANESE is required for the correct fuctioning of several enzymes, including those involved in conversion of nitrate into proteins, in photosynthesis, carbohydrate matabolism and oxidation systems in cells.

BORON is important in the movement of sugars within the plant. It is involved also in cell wall structure and is closely associated with the functions of calcium. It is associated with pollination and fertilization of plants.

ZINC is essential for the formation and functioning of hormones which control the growth of plants. It is also required for important enzyme systems in nitrogen metabolism and respiration, the breakdown of sugars to release chemical energy.

COPPER activates many enzymes and is present in high concentrations in the chloroplasts, the organs where photosynthesis takes place inside the cell.

MOLYBDENUM is required for the reduction of nitrate prior to the formation of proteins.

CHLORIDE has no known function within the plant as yet. But it has been proved that plants do grow better when a little chloride is present in the medium. Given time, we will find what function chloride performs within plants.

SODIUM is essential for a small group of plants including saltbush, an Australian desert plant. In all plants, too much sodium is toxic as it interferes with the correct functioning of potassium, calcium and magnesium within the plant. Small amounts of sodium can be beneficial if potassium is in short supply since sodium can substitute for potassium in some, but not all, of the essential functions of that element.

4 Jean Street,
TOOWOOMBA, Qld. 4350

(In Part II, Dr Grundon will deal with the need for a "balanced diet.")

SOME THOUGHTS ON *DENDROBIUM TETRAGONUM* A. CUNN.

by Ted Gregory

Of all the orchids that occur in my old stamping ground of the mid-north coast of New South Wales I think that *Dendrobium tetragonum* would have to be one of the most interesting. As I remarked in my last article on *D. linguiforme,* the shape and habits of some of the plants must have been hard for our forefathers to fathom out as they opened up this new land of ours in the 18th century.

In my old haunts, *D. tetragonum* is an orchid of the coastal swamps and watercourses, and also the rivers and creeks that venture inland towards the foothills of the Divide. It is at its most plentiful growing on trees directly over watercourses and seldom extends to any great altitude up the nearby hills; in fact in my experience I have seldom seen it occurring above a couple of hundred metres. *D. tetragonum* is an orchid that can occur in great profusion on old water-gums overhanging creeks where these trees were on land that could not be used for cultivation and were therefore spared the axe of the settlers. I have seen some of these water-gums almost completely sheathed in *Bulbophyllum exiguum* with up to a hundred plants of *D. tetragonum* of all sizes, dangling serenely from the mats of *B. exiguum.* Such sights as this make one wish that a lot more of our scrubs had not been decimated by the early settlers. On a more cheerful note: *D. tetragonum* seems to be re-generating along a lot of its old range now that dairy farming has ceased and the land is being used in a more sympathetic manner.

The most outstanding feature of *D. tetragonum* is, of course, the shape and habit of the plant itself. The canes of a large plant can be up to almost a metre in length, thin and wiry at the base and swelling up to almost 2cm thick towards the outer end and at the same time assuming an almost square section, giving the canes their familiar right-angled look. When these canes are young they grow horizontally, or even upward, but as they fatten into maturity they gradually droop until they hang almost vertically from the rhizome in the adult pendulous habit.

The leaves are more or less typical dendrobium leaves, deep green, leathery, usually up to about 10cm long, and there are normally four or five at the outer end of each cane, but at times there may be up to eight per cane. And these leaves are always set at an angle to the droop of the cane, just like louvres in a window. This angling arrangement may allow the leaves to do a more efficient job with the weak light that they normally have to work in.

These square shaped canes have flowering eyes for almost their full length and have the ability to flower over a period of years, so never cut off old canes until they are definitely dead.

As you all know, *D. tetragonum* extends from about my old area in New South Wales (Taree) to well up into north Queensland where it becomes known as var. *giganteum.* To my knowledge the only difference in these forms is in the size of the flower, and this matter of size seems to be a gradual business; the further north one goes, the bigger the flowers are. This is of course a rather wide generalisation; as with all of our orchids, flowers can vary considerably from area to area.

The flowers on the Hastings-Manning form are starry in shape and usually up to 5cm from top to bottom, with four or five blooms per raceme from the eyes among the leaves and two or three from the eyes further down the cane. A large plant of say thirty canes can be a fabulous sight in full bloom, just a mass of flowers from root to leaf-tips.

These flowers are unique amongst our epiphytes in that they are longitudinally striped in the most beautiful colour combinations. The most common combination is a vivid deep reddish-brown and any imaginable shade of yellow. Another unusual feature of these flowers is that the colour of the labellum is quiet in comparison to the rest of the flower, merging in rather than being the dominant feature of the bloom. As with all plants, there is a great range of variation, and although the colour scheme I mention above is rather dominant, some clones flower from almost pure white, through many tones of green to the colours I mentioned above, with some going beyond this to combinations that are almost a deep red.

Over the years I have seldom mentioned particular clones or particular areas, as this has been known to result in increased thievery, but I must mention a form that grows north of Port Macquarie as it is such an outstanding one. This form can be described best by just one word that always fools my tongue and that orchid judges love to use: floriferous! I have seen plants from there that flower up to thirtyfive blooms per cane — and all out on the leaf-end too. I was presented with a few plants from this area years ago, and I can say that they carry on this incredible habit in the bush-house. My one remaining piece of this clone puts up a wonderful show every year. It will be interesting to see how these plants act as parents and if they have the ability to pass this habit on. I believe that Wal Upton is using one as a parent. It will be interesting to see the results. As for me, I'm like Ferdinand; I just sit and look at the flowers till they are too old to use and then go crook!

As we move north along the east coast of Australia, the flowers of *D. tetragonum* gradually get bigger and bigger, until they may reach 12cm or more from top to bottom. But it is not only the size of the flower that changes; the colour arrangement varies as well. The longitudinal stripes gradually give way to a combination of stripes and blotches and quite often become all blotches. These blotches come in much the same combinations but are generally softer than those of their southern cousins. In the labellum there are big changes too. In these northern forms the labellum is often large and strikingly coloured, some being almost all beautifully red.

These forms have been used widely in hybridising and have passed on this vivid lip marking in many of their progeny.

This mention of progeny brings me to ask an interesting question on *D. tetragonum* which I will put to you in my usual roundabout way. As we all know, our Australian dendrobiums are split botanically into different groups, and it is not really easy to get the different groups to interbreed. And yet *D. tetragonum* will mate with almost any of these groups more or less easily; in fact this has been done for many years, as the "Checklist of Australian Hybrids" will tell you.

So, is *D. tetragonum* a connecting link in our dendrobiums, a sort of half-way house? Or is it entitled to a "section" of its own?

Another feature of this species that interests me is the very fine roots it has when compared with most other dendrobiums, and the fact that it passes this trait on to its hybrid progeny too, quite often.

D. tetragonum also has the ability to multiply by aerial growths at times, as does *D. kingianum*, and in much the same way. Some clones will do it frequently and some only rarely.

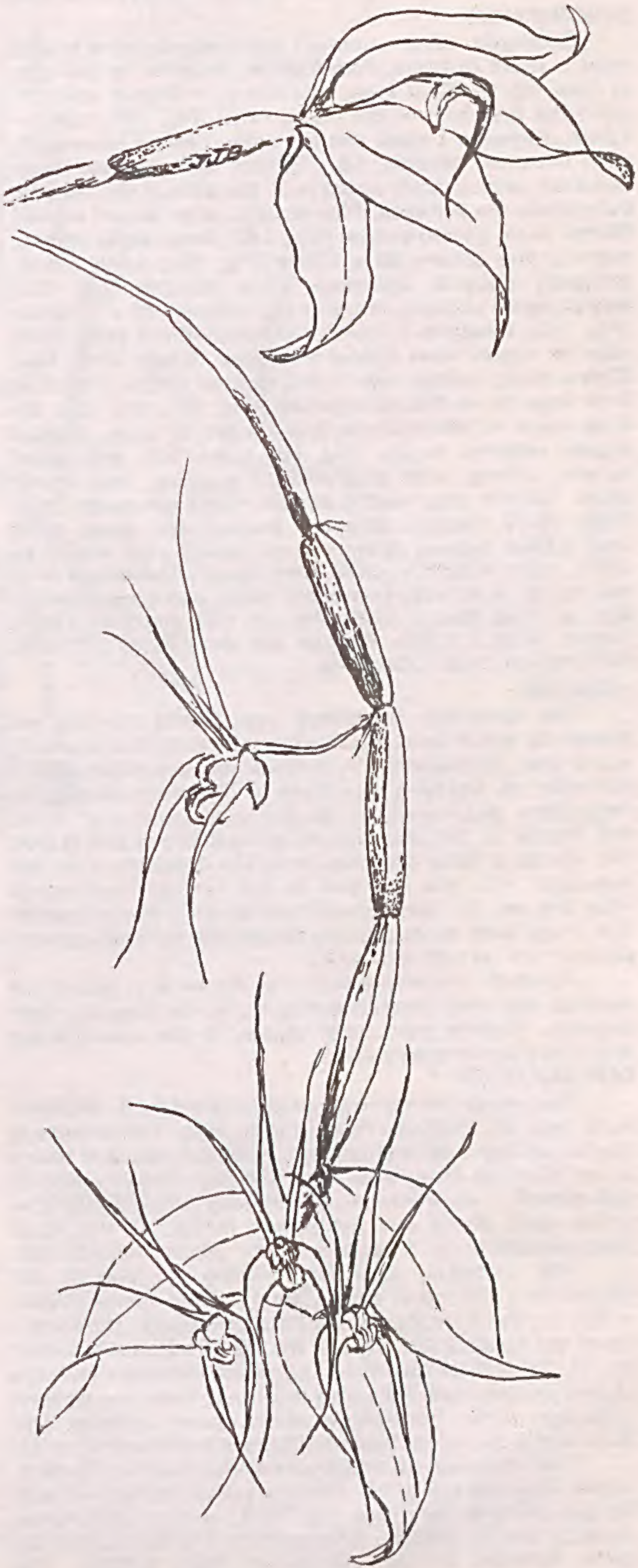
Cultivation:

Anyone attempting to grow *D. tetragonum* in the bush-house should remember the description of where the plant occurs naturally and they will be halfway to success. That is, a fair amount of shade and humidity and air movement. I have never tried to grow it in pots, as I think it would be an injustice to grow this beauty down low. It must be flowered where the flowers are around eye level so their full beauty can be appreciated. Ti-tree is my favourite host, closely followed by tree-fern slabs and any old dry hardwood. *D. tetragonum* does not like being disturbed, so make sure you use a fairly permanent mount when you have to mount or re-mount. As with all orchids, trim off all surplus roots and tie firmly to the host with strips of pantyhose. If it is a large plant be sure you have it firmly tied; otherwise it will move a lot owing to its shape and take a long while to establish.

It may be relevant to give a more thorough word or two on starting native orchids again, as it is a while since I did a note on this part of the business; and I think it is everyone's aim to grow plants to the best of one's ability.

Any plant obtained should be treated with fungicide and sprayed for pests before being taken into your bush-house. This applies whether the plant is out of the bush or a division from someone's collection. Orchids suffer from shock when torn from their element or being divided by man. A starter like "Formula 20" or "Field Pack" used in combination with an insecticide in a suitable container should be used, and the plants soaked in it for a few minutes. This will give the plant a good start and will also protect other plants in your bush-house from being exposed to any unnecessary risks. An application of these starters can be carried out with advantage every ten days or so until the plant is really thriving.

Oxenford Road,
1 June, 1981 **Mount Tamborine, Qld. 4272**



Contributions to the Orchid Flora of the Araucaria Forests in New Guinea — 3

Diplocaulobium auricolor (J.J. Smith) A.D. Hawkes

by N.H.S. Howcroft

During November 1977, whilst investigating *Araucaria cunninghamii* forests for seed collecting on Fergusson Island in the Milne Bay Province, the author discovered a flowering specimen of *Diplocaulobium auricolor* (J.J. Smith) A.D. Hawkes, growing in the upper crown of an *Araucaria* tree. Further collections of this orchid were made by staff of the Division of Botany, Office of Forests, Department of Primary Industry and Wau Ecology Institute, during a joint field collecting trip on Normanby and Misima Islands (March, 1979). Their specimen is reported to be from Misima Island. This beautiful orchid is one of several large-flowered species in this genus and is here described and illustrated in Figure 1.

Diplocaulobium auricolor (J.J. Smith) A.D. Hawkes, *Lloydia* 20 (1957) 127.
Dendrobium auricolor J.J. Smith in *Bull. Dép. Agric. Ind. Néerl.* N. 45 (1911)3; *Nova Guinea* 8, No. 3 (1909) 549, pl. LXXVII, D; *Nova Guinea* 12, No. 4 (1916) 296.

DESCRIPTION:

Epiphytic, with numerous erect pseudobulbs arising from a short rhizome. **Pseudobulbs** conoidal to fusiform at base, up to 65cm long, tapering to a slender stem beyond the first 2cm of the pseudobulb (Fig. 1A), base 1—1.5cm diameter. **Leaves** one per stem, narrow lanceolate, apex minutely bilobed, 18 x 3.3cm. **Inflorescence** single flowered, arising from a sheath at the apex of the pseudobulb above the leaf base. **Flower** large, when spread around 50mm wide, golden-yellow (Fig. 1A); **dorsal sepal** oblong, more or less obtuse, 30 x 12mm (Fig. 1B); **petals** broad, obliquely obovate, apiculate, 27 x 18.5mm (Fig. 1C); **lateral sepals** oblique, more or less obtuse, 28 x 10.5mm (Fig. 1D); **labellum** 3 lobed, flattened 16mm long, front edge of lateral lobes falcate triangular, 10mm wide, base 22mm wide, yellow with 2 red, spotted ridges extending from base to middle of labellum (Fig. 1F), mid lobe oblong, more or less truncate but bilobed at apex, margins slightly reflexed, rugose (Fig. 1E), upper part with raised surface, oblong, with barely visible papillae, from lateral lobes 10.5mm long, widest portion 4mm; narrowest 3mm (Figs. 1E-F). **Column** obliquely conical, light green, 4mm long, widest portion 4mm; column foot ± right angled to ovary, curved slightly, *circa* 8mm long; **clinandrium** with two wings each with two blunt teeth, and dorsal margin with a broad lobe or tooth (Fig. 1E, 1G). **Another** ± box-shaped, *circa* 2 x 2cm. **Pollinia** not seen. **Ovary** glabrous, with pedicel *circa* 4.2cm long.

HABITAT:

The specimen illustrated was found growing on *Araucaria,* which were growing in a fairy moss forest which, at the time, looked very dry and not very attractive as they normally do. Seedling specimens of *Diplocaulobium auricolor* were also found on the trunks of saplings of other tree species in the area and the general impression is that the species is fairly common here. The specimen from the *Araucaria* tree was exposed to full sunlight and winds from the sea, the root system had it well anchored to the tree trunk with roots growing under the tight stringy and papery bark, as well as over it.

Although the area was dry at the time, it was cloud covered and mist covered during early mornings and late evenings. Reports from other visitors to the area indicate that it can become very wet.

DISTRIBUTION:

This attractive species was discovered by B. Branderhorst near the Erlanden River in Irian Jaya. This locality is marked on Map 1 as locality No. 1. A variety was later found in the Cyclops Mountains near Jayapura (locality No. 2) and named *D. auricolor* var. *cyclopensis* by J.J. Smith who at the time, along with Schlechter, recognised the genus *Diplocaulobium* as a section of the genus *Dendrobium.*

The following localities, marked on Map 1, are Schlechter's collection areas. The Torricelli Range (locality No. 3), the Kani Range, the Finisterre Range, the Djamu River (all locality No. 4), and the Maboro Range (locality No. 5). Schlechter described and named two more varieties of this species from the above localities. These are *D. auricolor* var. *major,* from all the above named localities, and *D. auricolor* var. *minor* from the Djamu River (locality No.4).

The Fergusson Island specimen, illustrated in Figure 1, comes from the top of Mt. Morima, above Arlubrai Village, latitude 9°32'S, longitude 150°38'E, altitude 750 metres (locality No. 3, Map 1). This specimen is represented by spirit material in Lae Herbarium (NGF 64070). The Misima Island specimens were found on Mt. Giatan at ± 730 metres altitude (locality 4). The estimated annual rainfall for these localities is around 2,600mm. The species is likely to be found on other mountainous islands nearby.

FLOWERING SEASON:

The Fergusson Island specimen was flowering in situ in October, 1977. Misima Island specimens flowered in the Lae Botanic Gardens and at Wau Ecology Institute, which is much higher than Lae (approximately 1000m above sea level), in May, 1979.

CULTIVATION:

This orchid has been tried in the Lae Botanic Gardens on treefern blocks, at Bulolo on trees in deep shade, and at Wau Ecology Institute on trees. Elevations would be ± 20 metres, 750 metres and ± 1000 metres above sea level. Both attempts at cultivation, in Lae and at Bulolo, were unsuccessful. The Bulolo specimens died during a dry spell in spite of watering and Lae specimens lingered a fair while producing some flowers and a number of aerials. The Wau specimens appeared to be growing well the last time they were examined. Few aerials had been produced.

The Wau area is generally much cooler than the Bulolo area and has a slightly higher rainfall around 2,000mm per annum and is subject to more wet mists than the Bulolo region which can be subjected to periods of extremely dry weather.

NOTES:

(a) **Nomenclature** — Both A.D. Hawkes (1957) and P.F. Hunt and Summerhayes (1961) spelled the species name as *Diplocaulobium aureicolor.* The author has checked Stearn's Botanical Latin on this and, while not claiming to be a scholar of latin, can find no basis for this alteration of Smith's original spelling. In view of this the author has adopted the original spelling by J.J. Smith in preference to that of Hawkes and others.

(b) **References** — The following are references used for this article. It will be noted that the names have not been changed here and are quoted as published.

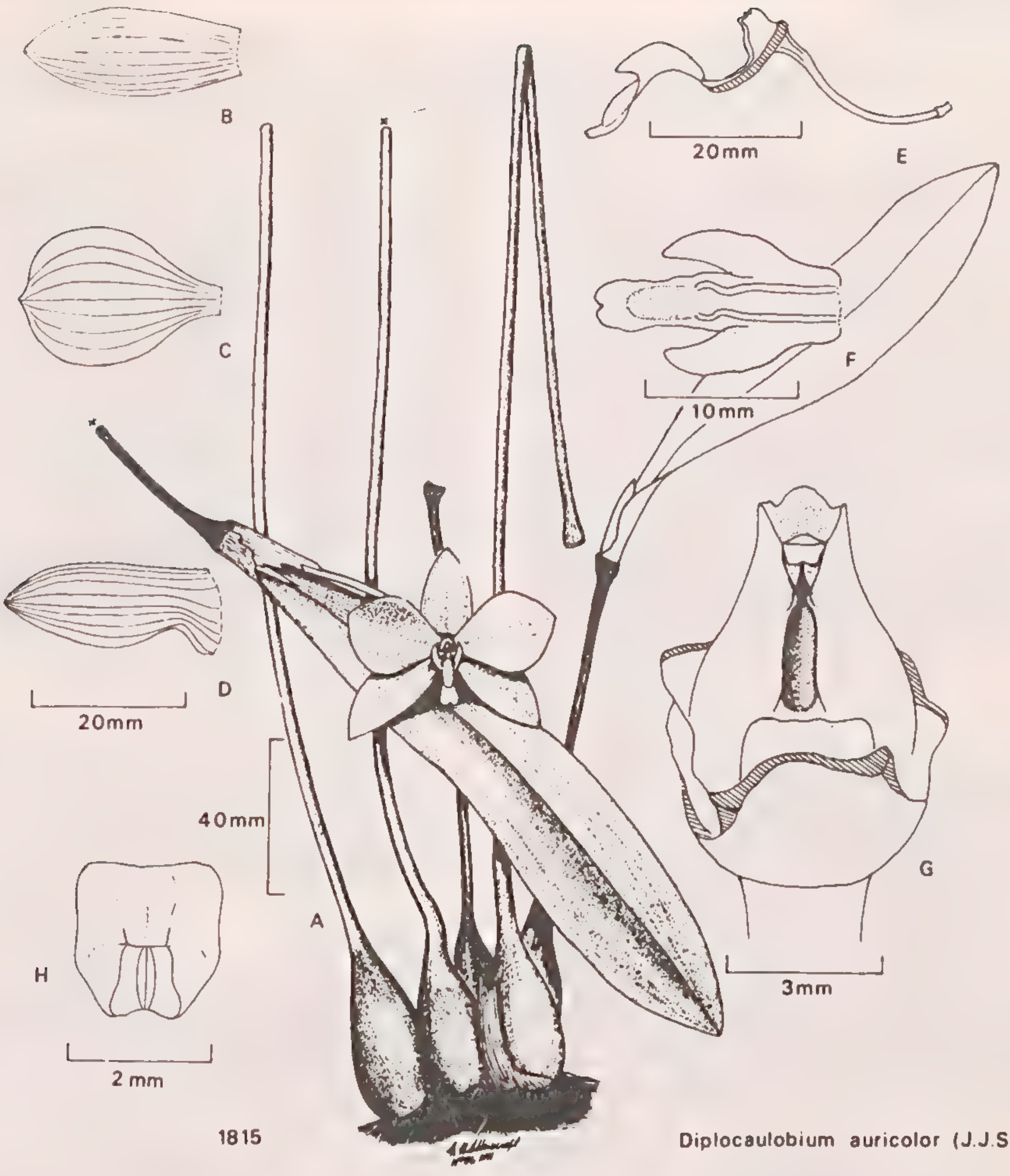
- *Diplocaulobium aureicolor* (J.J. Sm.) A.D. Hawkes, Lloydia 20 (1957) 127.
- *Diplocaulobium aureicolor* (J.J. Sm.) A.D. Hawkes, var. *cyclopense* (J.J. Sm.) P.F. Hunt et Summerhayes, Taxon, Vol. 10 (1961) 108.
- *Diplocaulobium aureicolor* var. *major* (Schltr) P.F. Hunt et Summerhayes, Taxon, Vol. 10 (1961) 108.
- *Diplocaulobium aureicolor* var. *minor* (Schltr) P.F. Hunt et Summerhayes, Taxon, Vol. 10 (1961) 108.
- *Dendrobium auricolor* J.J. Sm. in Bull. Dep. Agric. Ind. Neerl. n. 45 (1911) 3; Nova Guinea 8 (1909) 549—550, t. LXXVII, D.
- *Dendrobium auricolor* var. *major* Schltr in Fedde Repert. Spec. Nov. Beih. 1 (1914) 476.

(c) **Illustration** — The author's illustration No. 86 N.H. was done from live material for Fig. 1A and spirit material (NGF 64070) from the same specimen. Copies of this illustration have been lodged with the Lae Herbarium under number 1815 and cannot be reproduced without permission of the author.

ACKNOWLEDGEMENT:

I wish to thank Mr M. Galore of Botany Division, Lae, for the reproduction of my illustration, Mr B. Gagné of Wau Ecology Institute and Mr Jim Croft, of Botany Division, Lae, for specimens and information on the Misima Island collections.

December, 1980 **BULOLO, Papua New Guinea**



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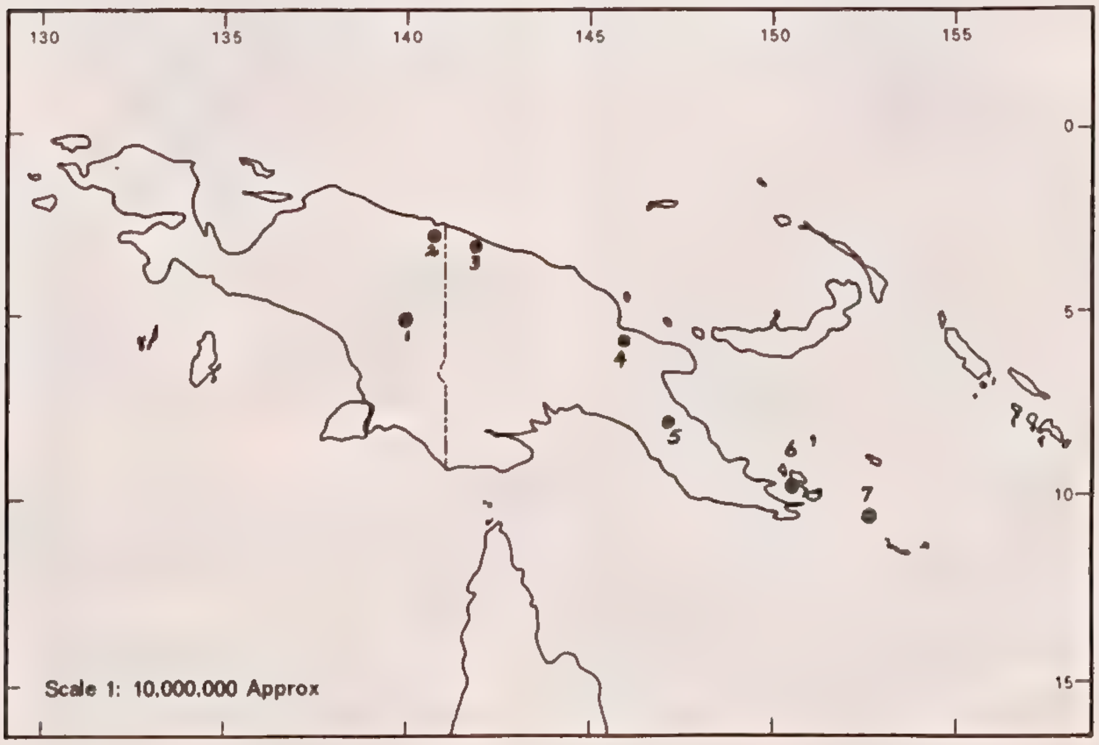
Diplocaulobium auricolor (J.J.Sm.) A.D.Hawkes.

Distribution of Diplocaulobium auricolor (J.J.Smith) A.D.Hawkes.



A NOTE ON THE GENERA *PERISTYLUS* AND *HABENARIA* IN AUSTRALIA AND NEW GUINEA

by N.H.S. Howcroft

In the course of research into literature on orchids during the past few years it is evident that further revision is required of the genus, *Peristylus* Bl. and genus *Habenaria* Willd., in Australia and New Guinea.

To the untrained eye there appear to be no differences between the basic floral structure of *Peristylus* and *Habenaria,* and over the years, botanists as well have shifted *Peristylus* in and out of the genus *Habenaria*. The two earliest prominent figures in New Guinea orchidology, R. Schlechter and J.J. Smith, apparently did not agree on the status of *Peristylus.* Schlechter obviously felt it best placed as a section of *Habenaria*, which created a total of six sections of his *Habenaria*, i.e. *Peristylus, Plantaginea, Acuiferae, Chlorinae, Salaccense* and *Medusaeformes.* Smith in his work, keeps *Peristylus* as a genus.

In more recent years *Peristylus* has become generally accepted as a genus. It is distinguished from *Habenaria* by its sessile, cushionlike stigmas which are connate to the basal portion of the labellum and auricles. The anther cells of *Peristylus* are shorter than in *Habenaria* or almost non-existent. The lateral branches of the rostellar arms are much shortened compared to the long arms of *Habenaria*.

The spur of *Peristylus* generally is shorter than the ovary, whereas in *Habenaria* it is as long or longer than the ovary. Examples of these differences are provided in figure 1.

Within the genus *Peristylus* there are characters which are constant enough, and shared among different species, to permit the species to be placed in sections. It has been suggested that possibly four sections could be eventually created (Seidenfaden 1977).

On the basis of these differences between *Peristylus* and *Habenaria*, P.F. Hunt (1971) removes twelve of Schlechter's twenty-five Papua New Guinea *Habenaria* species to the genus of *Peristylus*. One of these species has been previously recognised as a *Peristylus.* This species, *P. papuanus* (Krzl.) J.J. Smith, is also found in Australia where it is known as *Habenaria papuana* Krzl. (Hunt has not altered the gender of the species names).

In the work by Dockrill (1969) in *Australian Indigenous Orchids,* wherein he describes sixteen species of *Habenaria*, a number of these conform with the description of *Peristylus.* At least three further species, *H. banfieldii* F.M. Bail, *H. ovoidea* Rogers et C.T. White and *H. sumatrana* (Schltr) Schltr belong to the genus *Peristylus,* whilst another four species may prove to be *Peristylus* upon further, closer examination. Of particular interest to me is *Habenaria banfieldii*. This species is closely related to *Peristylus goodyerioides* (D. Don) Lindl. a widespread species and to New Guinea's *P. dolichocaulon* (Schltr) P.F. Hunt. It is tantalizing to think that the Australian species may prove to be conspecific with one or both of these *Peristylus.* Likewise, whilst *H. papuana* and *H. sumatrana* occur in New Guinea, several of the other Australian species have extremely close affinities with species found in New Guinea and S.E. Asia. These may eventually prove to be conspecific.

In concluding this note, it would appear, from available literature, that further revisional work is required for Australian and New Guinea *Peristylus* and *Habenaria.* It is suggested that such work should include a study of material from S.E. Asia.

References:

Dockrill, A.W. (1969): *Australian Indigenous Orchids.* 17-55.
Hunt, P.F. (1971): *Notes on Asiatic Orchids VI*, Kew Bull., Vol. 26(1) 177-178.
Schlechter, R. (1914): *Orch. von Deutsch New Guinea*, text 3-16.

14th July, 1981

Forest Research Station
P.O. Box 134, Bulolo. P.N.G.

Footnote: The author's request for further revision is answered partially by Dr. P.S. Lavarack's article in this issue of *The Orchadian*, Gloria Barretto's article is also relevant — Editor.

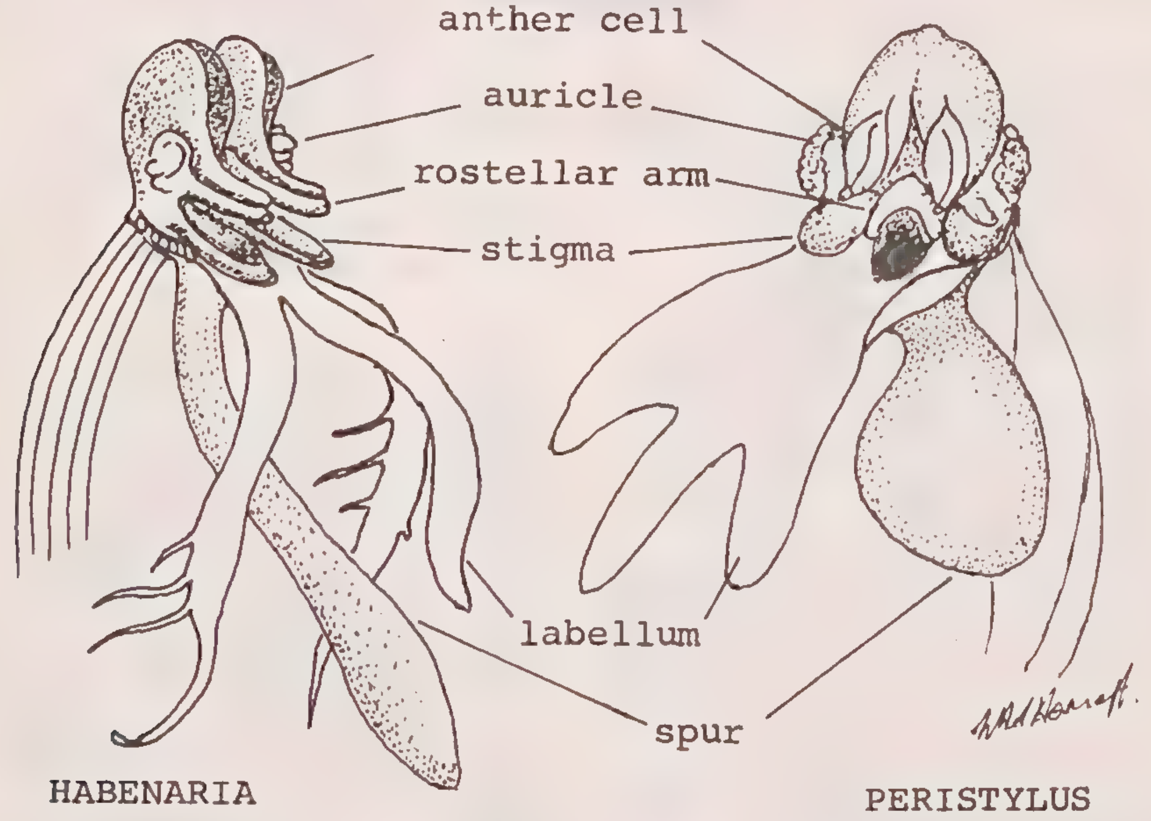


Figure 1.
Comparison of typical *Habenaria* and *Peristylus* flowers (column, labellum and spur).

NOTES ON *PERISTYLUS* AND *HABENARIA* IN QUEENSLAND

by P.S. Lavarack

The following is largely a summary of a paper published in "Austrobaileya" (Lavarack 1981). In this it was shown that *Habenaria banfieldii* F.M. Bail. should be placed in the genus *Peristylus. H. ovoidea* Rogers and White and *H. sumatrana* (Schltr) Schltr are synonyms of *P. candidus* J.J. Smith and similarly *H. anomala* Dockr. is shown to be a synonym of *H. xanthantha* F. Muell.

The Genus *Peristylus* Bl.

Dockrill (1969) on page 15 in his description of the subtribe *Habenariinae* makes the comment that ". . . very little is known about some of the Australian species, certainly insufficient to be sure whether or not they belong to *Peristylus,* so the present author (i.e. Dockrill) is following F.M. Bailey in including all of the Australian species in *Habenaria*". Recent published work as exemplified by that of Seidenfaden (1977) has tended to confirm the existence of *Peristylus* as a separate generic entity. According to Seidenfaden the genus is characterized by "an erect ovary raising close to the rachis, the caudicles of the pollinia very short without protruding protecting thecas* of the anthers . . . spur is shorter than the ovary and most often reduced to a more or less globular sac shorter than the petals".

This being the case at least two Australian species should be placed in *Peristylus.*

Peristylus banfieldii (F.M. Bail.) P. Lavarack, Austrobaileya 1 (4) 380-384 (1981).

Habenaria banfieldii F.M. Bail., Qld. Agric. J. 16:564 (1906); F.M. Bail., Comp. Cat. Qld. Plants: 539, fig. 528; Dockrill, Aust. Indig. Orchids 1:22-23 (1969). Until recently this species was known only from the Type specimen which was collected by E.J. Banfield on Dunk Island in 1901. In 1979 a colony of plants which appeared to be *H. banfieldii* was shown to me by Rev. Ron Collins near Mareeba. Subsequent careful examination and comparison with Banfield's Type proved them to be identical.

Peristylus banfieldii is closely related to *P. goodyeroides* (D. Don) Lindl., a widespread species occurring from Thailand to New Guinea. It differs in having smaller flowers and in the absence of a clearly defined triangular nectary at the entrance to the spur.

It was possible to record some of the data missing from the Type specimen: Flowering period (for the Mareeba population) January — March. Habitat: permanently wet soil beside a small creek, in full sun. The plants have an oblong tuber 3—4 x 2—3cm.

Peristylus candidus J.J. Sm., Fl. Buitenz. 6:36, Fig. 18 (1905); Seidenfaden, Orch. Genera in Thailand V:60; Fig. 30 (1977); P. Lavarack, Austrobaileya 1 (4) 380-384.

Habenaria sumatrana (Schltr) Schltr, Engl. Bot. Jahrb. 45, Beibl. 104:3 (1911); Holttum, Fl. Malaya 1:88, Fig. 14a (1957); Dockrill, Aust. Indig. Orchids 1:40, 51 (1969).

Habenaria ovoidea R.S. Rogers et C.T. White, Proc. Roy. Soc. Qd. 32:140-141 (1921); Dockrill, Aust. Indig. Orchids 1:32-33 (1969). Seidenfaden (loc. cit.) recognized that the widespread *H. sumatrana,* which occurs from south east Asia to Australia, was synonymous with *Peristylus candidus,* an earlier name. Careful comparison of the Type of *H. ovoidea* with fresh material collected near Cardwell and with the description and figures of *Peristylus candidus* by J.J. Smith and with the excellent figure of Seidenfaden quoted above have satisfied the present author that *H. ovoidea* is identical with *P. candidus.*

Habenaria xanthantha F. Muell., Fragm. Phyt. Aust. 7:16 (1869); Benth., Fl. Aust. 6-395 (1873); F.M. Bail., Qld. Flora 5:1591 (1902); Dockrill, Aust. Indig. Orchids 1:31-35 (1969); Rog. and White, Proc. Roy. Soc. Qld. 32:137-139 (1921); P. Lavarack, Austrobaileya 1 (4) 380-384 (1981).

Habenaria anomala Dockr., Orchadian 1:150-1 (1965); Aust. Indig. Orchids 1:30-31 (1969).

Dockrill (1969), made the comment in reference to *H. anomala* 'It is possible that it may prove to be merely a form of *H. xanthantha* F. Muell'. Some recent collections made near Cardwell in north Queensland have, in the opinion of the present author, confirmed this. A large population growing near Sunday Creek was examined and some plants fitting both the species in question were discovered.

All the plants examined had very similar column structure but differences in the relative length of the stigmatophores were present. On careful examination of several inflorescences it was noted that the older flowers had longer stigmatophores than the younger ones implying that these structures lengthen with age. Apart from this difference, the column, petals, sepals and vegetative parts of all plants collected, were identical. The labellum varied with respect to the spur and the lateral lobes. All plants studied had a broad labellum of about constant length (3 x 7mm). The spur ranged from totally absent to about 5mm long with several specimens having a spur 0.5—1mm in length. The length of the spur varied on individual flowers on a single plant, in one case 3 flowers had a small but definite spur while the other flower had no spur. The lateral lobes varied from long to short or absent with much variation evident among the flowers on each inflorescence.

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* "Theca" — in general, a protective covering structure, e.g. a capsule or sporangium. (Ed.)

Most of the flowers studied matched the description of *H. xanthantha* F. Muell. well except that in several cases the spur was 4 or 5mm long instead of the stated 1–2mm. One plant and one flower on another plant agreed well with the description of *H. anomala* Dockr. Some of the flowers seemed half way between the descriptions of the two taxa as the spur was present, but only 0.5mm long. (It is absent in *H. anomala*).

A careful comparison of the Types of *H. anomala* and *H. xanthantha* indicated very little difference other than in the previously-mentioned features of the labellum and spur. Both of these specimens would fit within the range of variation noted in the Cardwell specimens. The presence of intermediate plants and flowers and the overall similarity of all plants studied (including the Types) have led to the conclusion that all specimens observed represent one species, variable only in the labellum. This being the case, *H. anomala* Dockr. becomes a synonym of *H. xanthantha* F. Muell.

Acknowledgements:

The author is indebted to Mr L. Pedley, editor of "Austrobaileya" for permission to re-use certain material first published in that journal and to Dr G. Seidenfaden of Copenhagen who compared specimens of *Peristylus banfieldii* with *P. goodyeroides* on behalf of the author.

References:

Dockrill, A.W. (1969) – Aust. Indig. Orchids 1. Soc. Growing Aust. Pl., Sydney 825 pp.

Lavarack, P.S. (1981) – Notes on Queensland Orchids II *Austrobaileya* 1 (4) 380-384.

Seidenfaden, G. (1977) – Orchid Genera in Thailand V, Orchidoideae. Dansk Bot. Ark. 31. (3)

Queensland National Parks
and Wildlife Service,
Townsville, Qld. 4810

June, 1981

AN ADDITION TO THE ORCHID FLORA OF HONG KONG

A new species of *Habenaria* Willd.

by Gloria D'A. Barretto*

A delicate *Habenaria* species was discovered, in flower, on Hong Kong Island by Bernard Coultous, a local resident, on 18 October, 1978. The plant was not represented in the Hong Kong Herbarium and it could not be identified from the literature available to the author on the Orchidaceae of this geographic region. Following much study, comparison of material, and information kindly supplied by The Herbarium, Royal Botanic Gardens, Kew, the conclusion reached was that the Hong Kong plant did not match any described species and warranted recognition as a new taxon.**

Habenaria coultousii **Barretto sp. nov. affinis *H. pantlingianae* sed habitu gracili paucifolio, floribus angustis distincte coloratis, sepalo dorsali profunde concavo, petalis bipartitis segmentis inaequalibus, calcari fusiformi cylindrico, stigmatibus brevibus decurvatis valde distincta. Typus: Hong Kong, *Coultous in Barretto* 179 (holotypus K; isotypus HK).**

Plants slender, not robust, 15–45cm tall, glabrous. *Roots* short, up to 3 observed; tubers 3–4 on taller plants at anthesis (i.e. flowering period), fusiform or oblong, densely hairy, up to 3.5cm long, 1.5cm in diameter. Cataphylls (i.e. rudimentary leaves) short, 2–3 below ground, 3–4 above. *Leaves* on mid-stem, 3–4, sparse, cauline, sessile, sheathing, blade 2.5–5.2cm long, 8–12mm broad, lanceolate or ovate-lanceolate, acuminate, the margin with a very narrow membranous rim, nerves 5, inconspicuous. *Scape* and *rachis* whitish green. Bracts 2–3, up to 3cm long, the lower ones broader; floral bracts cymbiform narrowing to a fine apex, up to 2.4cm long, usually longer than the pedicellate-ovary. *Flowers* white and green, long and narrow, 2–9, about 1cm apart, 17–20mm long from tip of dorsal sepal to tip of midlobe of lip, 13–16 mm between tips of the lateral sepals. *Sepals* white tipped green, the back apple-green, 8–9mm long, 3.5–4.5mm broad, the apex acute; the dorsal erect, narrow ovate, deeply concave; the lateral sepals wide-spreading, pointing downward, oblique-ovate concave, the rim of the lower margin creased upward to the apex, 3-veined, delineated darker green on outer side, the mid-vein on the dorsal sepal rib-like in profile. *Petals* white, 9–11mm long, oblique-ovate, about 2mm broad at the base, bilobed from base to apex, the enterior filiform above with 3 veins running upward, segments unequal, the posterior arms shorter and broader than the anterior, forming a hood with the dorsal sepal when freshly opened, then detached, erect, sword-like on each side, anterior arms filiform, extending upwards, usually curling at the tip. *Lip* trilobed, pale green, 9–12mm long, about 1.5mm broad at the base, tapering to acute apex; lateral lobes narrower, about as long as the midlobe, extending sideways; *spur* pale yellow-green, the base narrow, almost white, 22–24mm long, slender, curving slightly, broadest along the middle, tapering to the apex, longer than pedicellate-ovary. *Column* greenish white, stout, concave, the anther fused to the column, the thecae as narrow deep canals; pollinia 2, yellow, subroun-

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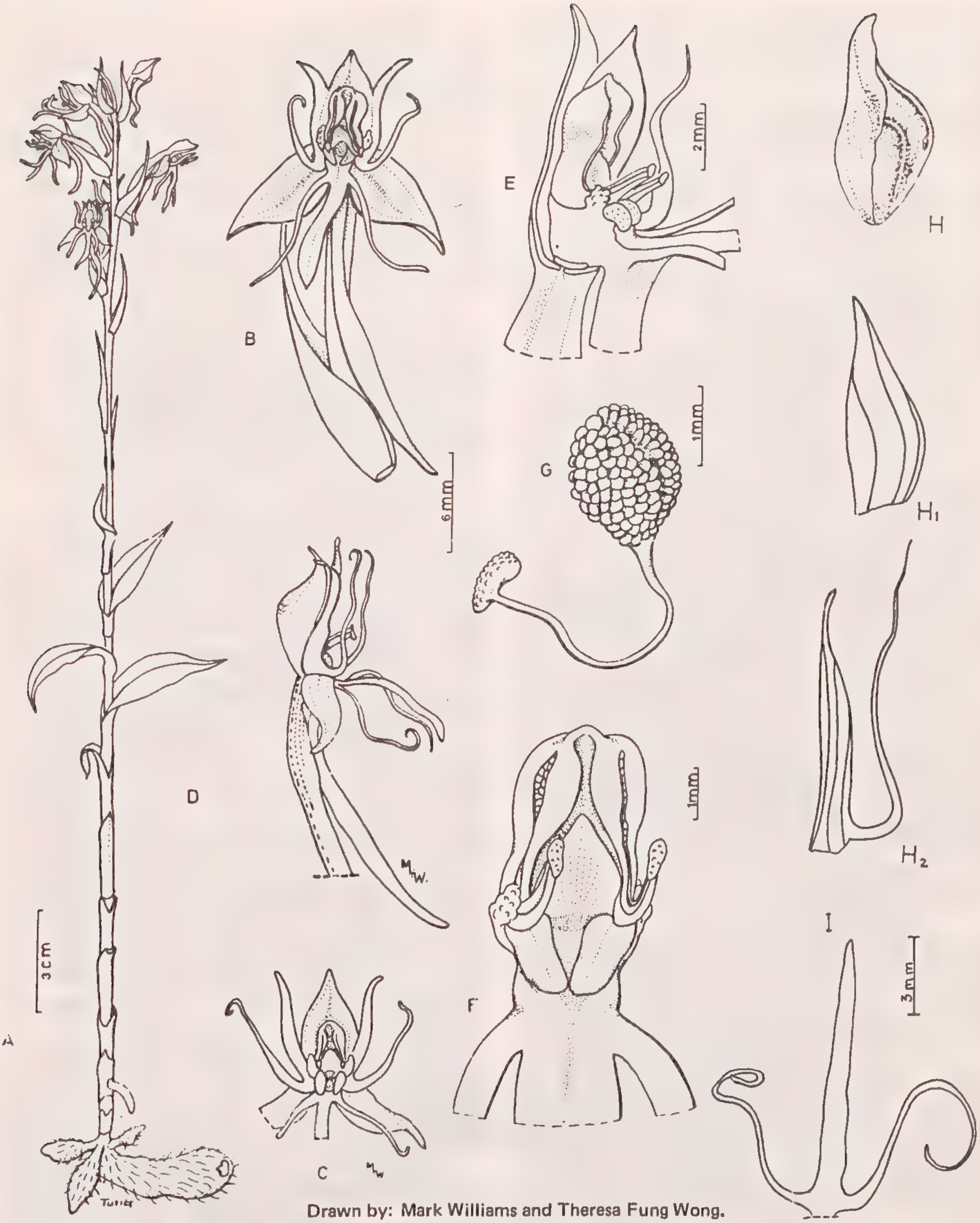
* Kadoorie Botanic Gardens,
Lam Tsuen Valley, Taipo,
New Territories, Hong Kong.

** British territory, 1046km^2 in extent off the coast of South China, and with some land along the coast, bordering the province of Guongdung (Kwangtung).



Drawn by: Mark Williams and Theresa Fung Wong.

FIGURE 1

Habenaria coultousii Barretto: **A.** Habit sketch of a flowering plant showing developing and mature tuberous roots, the sheathing cataphylls, the short narrow leaves, the scape bearing long sterile bracts, and the flowers in a loose head subtended by cymbiform bracts. **B.** Front view of a flower showing the acuminate floral bracts, the dorsal sepal, the lateral sepals showing the lower margins creased upward, the bipartite petals, the trilobed lip, and the cylindric-fusiform spur. **C.** Detail — front view of a flower showing the helmet-like dorsal sepal and the bipartite petals with posterior segments detached from the dorsal. **D.** Lateral view of a flower showing the dorsal sepal, the base of a bipartite petal, the lip and long spur. **E.** The column, showing the rostellum and lateral arms, the cone-like glands, and the short curving stigmas. **F.** Another view of the column showing the thecae and pollinia within, the lateral glands, the triangular rostellum, the viscidia, the prominent stigmas, and the orifice of the spur. **G.** A pollinium on a long caudicle, and the oblong viscidium. **H.** Dorsal sepal, side view showing the rib-like fold. **H.1:** a lateral sepal; **H.2:** a petal. **I.** The trilobal lip.

ded, caudicles 3.5—4mm long; viscidium exposed, yellow, 0.5mm long; rostellum erect, 1.5mm long, triangular, concave, the arms supporting the column arms; glands conical, erect, short, lateral to the column; stigmas 2, lateral to orifice of spur, creamy white, thick, bean-shaped, curving down and inward. *Pedicellate-ovary* 18—20mm long, 2mm in diameter, narrowed at the apex, slightly grooved; ripe capsules including the pedicel 25—29mm long, distinctly ridged and grooved.

HONG KONG ISLAND, Violet Hill, facing N.W. on the 1,000 ft. contour, 18 October, 1978, *Coultous in Barretto* 179 (holotype K; isotype HK); same locality 15 October, 1979 *Coultous & Williams in Barretto* 205 (PE); the same stream course, 2 November, 1980, *Barretto* 220 (A).

HABITAT: Growing in rich loam and humus, on sloping hillside a few feet above a stream course, in shade of a wooded ravine.

The genus *Habenaria (Orchidoideae)* is a large one, comprising over 600 species, occurring in tropical, subtropical and temperate regions. This Hong Kong plant belongs to the highly complex section *Ate* as defined by Hooker f. (1890), one of the principal characters being the bipartite petals. Jeffrey Wood and Dr Phillip Cribb of The Herbarium, Orchid Section, Kew; T.P. Lin of the Forestry Research Institute, Taiwan, and Dr Gunnar Seidenfaden, whose research on the orchids of Thailand is well known, were asked for help on identification. It was not known to them nor represented in their herbaria. The concensus was that it was close to *H. digitata* Lindl. and *H. amplexicaule* Rolfe ex Downie. With the existing scant knowledge of this group, it was suggested that when more collections were available, it may eventually be found to be a variety or form of *H. amplexicaule.* I was advised to compare our plant with the above two and other closely allied species. I did so.

I examined *Ate* material at The Herbarium, Kew and am satisfied that the Hong Kong *Habenaria* did not match them. I found no orchid like ours in the herbarium of the South China Institute of Botany, Academia Sinica, Guongzhou (Canton). The material examined differed, among other characters, in the following. In *all* of them by their tall and/or robust habit, the numerous leaves and their generally large size with apex not acuminate; also *H. amplexicaule* differed in leaf venation (10 veins), the rounded dorsal sepal, the short 14-15mm spur, club-shaped at the apex, *H. digitata* was not alike because of the wavy leaf margin, broad dorsal sepal, short clavate spur, straight stigmas and prominent glands; *H. macrostachya* Lindl. in addition to the broad petioled leaves, differed with the sepals long, petals truncate and spotted red, the spur also spotted red; *H. stenopetala* Lindl. by the filiform tip of the dorsal sepal, the anterior petals not longer than the posterior, the spur with no swelling and the clavate stigmas; *H. cirrhifera* Owhi with much larger flowers, aristate sepals and petals, long lip and linear spur. *H. pantlingiana* Kranzlin. described from Sikkim was also compared by virtue of its occurrence on Hainan Island, South China and flowering in October. It differed with its dense flower scape, the colour green with no white, very long (25-30mm) sepals with long apex, and long (18mm) petals. A specimen of our plant was sent to Professor Sing Chi Chen, Academia Sinica, Botanical Institute, Peking and he wrote, March 1980, that he and Mr K.Y. Lang considered it "a new species closely related to *H. pantlingiana* but (Hong Kong plant) differs because of its acute sepals, bilobed petals with the post-lobe wider and a little shorter than the front one, and cylindric-fusiform spur." This was reiterated when the author visited Peking in October 1980 and confirmed by Professor T. Tang personally. The habitat of the species ranged from North India, Nepal, and Sikkim to Burma, Thailand, Indochina, China including Hainan Island and Taiwan to the Southern Ryukyu Islands.

The Hong Kong plant is frail and spare, never procumbent, leaves few and inconspicuous, flowers sparse, dorsal sepal narrow, deeply concave, acute, the lower margins creased upward to the apex, petals bipartite with anterior segments longer and filiform, spur cylindric-fusiform, and with stigma, venation and colour differences which distinguish it from described species.

We have seven indigenous *Habenaria* speices in this territory and they all correspond closely to the type material, viz. *H. ciliolaris* Krzl; *H. dentata* (Sw.) Schltr; *H. linguella* Lindl., *H. reniformis* (D.Don) Hk.f., *H. rhodocheila* Hance; *H. susannae** (L) R.Br., *H. goodyeroides** D.Don. The floral characters of these species have not been modified wherever their habitat may be, despite variations in climate in the vast areas of South Eastern Asia, including India. It follows, albiet not conclusively of course, that our new *Habenaria* should therefore match closely one of the species of the *Ate* group, just as the afore-mentioned seven match theirs, but it differs significantly, which suggests that it is a distinct species.

Occurring in Hong Kong and the adjacent New Territories is *Habenaria leptoloba* Benth. Fl. Hongk. p.362, 1861. Hance's collection 1288 (Type). This orchid has not been recorded from elsewhere. Our new plant may also prove to be endemic.

Understandably, there is a disinclination to describe a new taxon in the *Ate* section when little is known of the group in this region. Dr Seidenfaden wrote along similar lines when proposing *H. thailandica* Seidenf.

I have checked and cross-checked the literature and species involved in this study. I have followed the suggestions kindly put forward by the botanists I have approached. To all of them, and Jeffrey

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*: Included in *Habenaria* by Holttum (1964).

Wood in particular, I would like to express my appreciation of their interest and help. I am proposing a new taxon for this Hong Kong member of the section *Ate* as it appears to be distinct and there are sufficient characters that warrant its recognition at specific rank.

The new species is named for its discoverer, Bernard Coultous, amateur native plant enthusiast and a member of the Hong Kong wild orchid study group.

I thank the artists, Mark Williams and Teresa Fung Wong for the fine execution of the sketches.

LITERATURE

Bentham, G. 1961: *Flora Hongkongensis.*

Dunn, S.T. and W.J. Tutcher, 1912: *Flora of Kwangtung and Hong Kong.*

Flora Hainanica IV 1977. *Compiled by The South China Institute of Botany, Kwangtung.*

Garay, L.A. and H. Sweet, 1974: *Orchids of the Southern Ryukyu Islands.*

Hooker, J.D. 1890: *The Flora of British India VI.*

Holttum, R.E. 1964 ed.: *Flora of Malaya I Orchids.*

Hu, S.Y. 1971-1975: *The Orchidaeae of China,* An Enumeration pub. in Quarterly Journal of the Taiwan Museum.

Hu, S.Y. 1977: *The Genera of Orchidaceae in Hong Kong.*

Kranzlin, F. 1901: *Orchidacearum genera et species I.*

Lin, Tsan Piao, 1975: *Native Orchids of Taiwan I.*

Lin, Tsan Piao, 1977: *Native Orchids of Taiwan II.*

Ohwi, J. 1965: *Flora of Japan.*

Seidenfaden, G. and T. Smitinand, 1959: *The Orchids of Thailand, Pt. I-IV.2.*

Seidenfaden, G. 1977: *Orchid Genera of Thailand V Orchidoideae.*

Tang, T. and F.T. Wong, 1936: *Notes on the Orchidaceae of China;* 1951: *Contributions to the Knowledge of East Asian Orchids.*

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A NEW SUBSPECIES OF *PTEROSTYLIS* FROM NORTH QUEENSLAND

by S.C. Clemesha

SUMMARY:

In this paper *Pterostylis ophioglossa* R.Br. var. *collina* Rupp is reduced to a synonym of *P. ophioglossa* var. *ophioglossa* and *P. ophioglossa* ssp. *fusca* is described as a new subspecies.

P. ophioglossa R.Br. var. *collina* Rupp, Proc. Linn. Soc. N.S.W. 54:552, Fig. 2 (1929) and Orchids N.S.W. (1944) 82; Nicholls, Orch. of Austr. 1:t. 62 col. (1955) and Orch. of Austr. complete edition 80 Pl. 298 (1969).

P. ophioglossa var. *collina* was described from specimens collected by Rupp in June, 1926 from Hungry Hill near Paterson N.S.W. With his Ideotype specimen is a photograph of plants of this variety in cultivation.

Specimens collected at Kelsey Creek near Proserpine north Queensland during June, 1936 by N. Thorogood were considered by Rupp to be var. *collina.* Since that time all specimens of *P. ophioglossa* from north Queensland that I am aware of have been identified as var. *collina* while the variety to my knowledge has not been reported from elsewhere in N.S.W.

Nicholls's plates of var. *collina* differ little from small specimens of var. *ophioglossa* and they do not resemble the north Queensland specimens I have seen. I therefore examined the Ideotype specimen of var. *collina* and the photograph that is with it. This material is held by the N.S.W. National Herbarium. The specimen and photograph represent normal specimens of *P. ophioglossa* var. *ophioglossa.* They are even less distinctive than Nicholls's plates. As the var. *collina* represents the same taxon as var. *ophioglossa* it should now be regarded as a synonym of it.

The north Queensland plants formerly incorrectly identified with var. *collina* represent an undescribed taxon and this is described below.

Pterostylis ophioglossa R.Br. ssp. **fusca** S.C. Clemesha subspec. nov.

Haec subspecies a subspecie *ophioglossa* differt floribus rubello-brunneis parvioribus nutantioribus et sepalo dorsali, petalis labelloque arcuatioribus.

Holotype: Near Herberton, north Queensland. Collected by Mr B. Gray 7th June, 1973. The specimen is in the Queensland Herbarium at Brisbane.

This subspecies differs from ssp. *ophioglossa* in its smaller, more nodding flowers which are reddish brown. The dorsal sepal, petals and labellum are more curved than those of ssp. *ophioglossa.*

Specimens examined: The type specimen mentioned above. The flowers were received fresh and pressed by myself. The other specimens I have examined are dried ones at the N.S.W. National Herbarium.

Kelsey Ck. Proserpine, N. Thorogood, June 1936.
Mt. Fox, W.W. Abel, May 5th, 1955.
Lindemann Island, Miss I. Bowden June, 1950.

I have not seen any specimens of *P. ophioglossa* ssp. *fusca* from south of the Tropic of Capricorn or any specimens of ssp. *ophioglossa* from north of it. I therefore think the two subspecies are geographically isolated from each other.

The ssp. *ophioglossa* is also found in New Caledonia and *P. tenicauda* Kränzlin from there was reduced to a synonym of *P. ophioglossa* ssp. *ophioglossa* by myself in *The Orchadian*, 3, 3, (May, 1969) 30.

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18 February, 1981

OBSERVATION OF POLLEN VECTORS ON A PUTATIVE HYBRID SWARM OF *MICROTIS R Br*

by R. Bates

Abstract: Observation of insects transferring pollinia in what appeared to be a hybrid swarm of *MICROTIS* was carried out near Mylor, South Australia in November and December 1980.

Observation took place in an area of some 2 hectares of disturbed bush alongside the Leslie Creek, which is twenty kilometres south-east of Adelaide. The area had been razed by wildfire during the disastrous "Ash Wednesday" bushfire in February, 1980. The location had been part of a market garden during the 'Depression' years.

Microtis parviflora R.Br. of the form var. *densiflora sensu Rogers non Bentham* was common on grassy flats along the creek. In the tea-tree (*Leptospermum pubescens*) thicket *Microtis rara* R. Br. grew and in dry rocky terrain 100 metres above the creek *Microtis unifolia* (Forst. F.) Reichb. was widespread. In the gully between them were great numbers of apparent intermediate forms between these three species. All degrees of intermediacy were noted, there being a gradual merging of each species into the others when all forms were collected and compared.

Some 10% of plants in flower harboured small spiders of various species, which fed on the numerous flies, beetles and gnats which visited the flowers. Only two species of insect were seen to collect pollinia. These were both hymenoptera; tiny black male wasps of the family Ichneumonidae and orange Brachonidae, both males and females. Both insect species were 4-5 mm in length.

These wasps were numerous in the study area and on hot afternoons could be observed on some 20% of flower spikes at any one time. In November, when the flowers were freshly opened, up to 50% of both wasp species could be observed carrying pollinia. The wasps visited all three species of *Microtis* and the putative hybrids, but did show some preference for *M. rara* and the intermediate forms which emitted a slight sweet fragrance similar to that of *Boronia megastigma.*

The insects were observed to alight on various parts of the flower spike and move on to the vertically placed labellum of a nearby flower with their heads uppermost. Despite the apparent absence of nectar the wasps moved upward until they were positioned in the groove between the prominent darker green basal calli of the labellum. In this position the head of the insect is in contact with the viscid disk of the pollinia. The slightest touch of this disk serves to bring away one or both pairs of these pollinia. The pollinia are loosely enclosed by a hooded anther. They are in two pairs each comprising a larger outer sheet and smaller inner one. They are reniform in shape and are united to a short caudicle which ends in the viscid disk (Nicholls plate 98 fig. G 1969).

When the insect withdraws, the pollinia attached to its head fall slightly under their own weight or by rotation of the caudicle so that they are in a position in front of the insect's head to contact the stigma of the next flower visited.

Only part of the pollinia comes off on to the stigma of each flower so that there is always a section left to adhere to the stigma of flowers subsequently visited. The wasps continued to collect as many as five sets of pollinia, although they could as times be observed endeavouring to scrape the pollinia off.

Of the flower spikes examined, usually all but the top few flowers had had part of their pollinia removed. Some plants carried in excess of sixty individual flowers.

Microtis flowers also possess a back-up system for achieving fertilization. They possess a degree of autogamy or self-pollination.

Thompson (1878) describes how the pollen grains if not removed "emit a great mass of tubes which penetrate the upper margins ofthe stigma".

This autogamy ensures that all flowers set seed and examination of thousands of plants of most *Microtis* species show that this is the case.

The author collected voucher specimens of all *Microtis* species in the study area as well as the putative hybrids and these are lodged at the State Herbarium, Adelaide. The pollen vectors were identified by Eric Matthews of the Adelaide Museum and are lodged with the flowers on which they were collected in the Herbarium's 'wet collection'. Slides of the insects on the flowers are in the author's collection, together with notes on observation of a spider (*Diaea* sp.) catching and devouring a specimen of *Brachonidae*, bearing pollinia.

SUMMARY: The dual system of pollination in *Microtis* can be seen to be very effective. There is little doubt that cross pollination between different species does occur and this explains why it is so difficult to identify *Microtis* plants in many areas as one species or another. It would appear that wasps are the most effective pollinators of *Microtis* in the *M. unifolia, parviflora, rara* complex.

References:

Bates, R.: *Self-Pollination in South Australian Orchids' — Journal of the Native Orchid Society of South Australia,* Sept. 1978.

Curtis, Winifred M.: *'Students Flora of Tasmania'* 4A : 59 (Jan. 1980)

Nicholls, W.H.: *'Orchids of Australia'* edited by D.L. Jones & T.B. Muir, Nelson, Aust. (1969)

Thompson, G.M.: *'On the means of fertilisation of some New Zealand orchids'* in *Transactions of the New Zealand Institute* 11 : 418—428 (1878)

1 July, 1981

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TWO NEW ORCHIDS FROM CAPE YORK PENINSULA

by P.S. Lavarack

The two species described below are recently published in 'Austrobaileya', (i.e. the formal descriptions of the two new species). Since this journal is not readily available to the majority of the public with an interest in orchids, the author has, with the kind permission of the editor of that journal, prepared the following account.

Cadetia collinsii **P. Lavarack, Austrobaileya 1 (4): 380-384 (1981).**

Plant epiphytic forming small dense clumps. Stems 6—18 x 1.5—2.5mm, consisting largely of a single internode, often enclosed for half the length by the remains of a sheathing bract. Leaves 11—22 x 5—10mm, ovate to lanceolate, emarginate, narrowing at the base to form a short petiole about 2mm long. Flowers borne singly at the apex of the stem, floral bract about 2mm long. Pedicel 3mm long, ovary about 1.5mm long covered with dense fleshy hairs about 0.5mm long. Sepals ovate, white, 3 x 2.5mm; petals linear, white, 3 x 0.5mm. Labellum oblong, 3—4 x 1.5—2mm with a spur about 1.5mm long, white, lateral lobes very small, disc sparsely and minutely pubescent. Column erect 1.5—2 x 1—1.5mm with 2 prominent purple apical teeth extending above the anther, sparsely and minutely pubescent below the stigma. Stigma approximately square, about 0.8mm across. Anther white with a short, broad rostrum, lower part of pollinia projecting over the upper part of the stigmatic surface. Capsule globose, 2—3mm in diameter covered with long fleshy green hairs.

On examination of some unopened buds it was found that the pollinia were fused to the stigmatic surface. This, allied to the high incidence of fertilisation suggests that most, if not all, flowers are autogamous.

Cadetia collinsii resembles *C. maideniana* (Schltr) Schltr, but is smaller in all its parts and differs in the following features:

The labellum in *C. maideniana* has a thick fleshy midlobe, the apex being concave; while in *C. collinsii* the midlobe is only slightly fleshy and the apex is rounded with a small blunt point. The lateral lobes of the labellum are more pronounced in *C. maideniana* than in *C. collinsii.* The apical teeth on the column in the former is more slender than that of the latter. There are also differences in the shape of the sepals, all three being nearly equal in *C. collinsii,* giving the flower an almost regular appearance, while the lateral sepals differ from the dorsal in *C. maideniana* giving the flower a strongly zygomorphic appearance. *C. collinsii* has been observed in the gorges of the Rocky River, Chester River and Leo Creek and in a gorge on the Janet Range about 100km to the north. It is a plant of lowland creek gorges usually growing low down on trees in at least partial shade. The flowering period is spasmodic, but largely in December to April.

C. collinsii is named in honour of Rev. R. Collins of Atherton, who encouraged the author in his early studies of Australian orchids and, more recently, assisted on field trips to Cape York Peninsula, actually being present when this orchid was first officially collected.

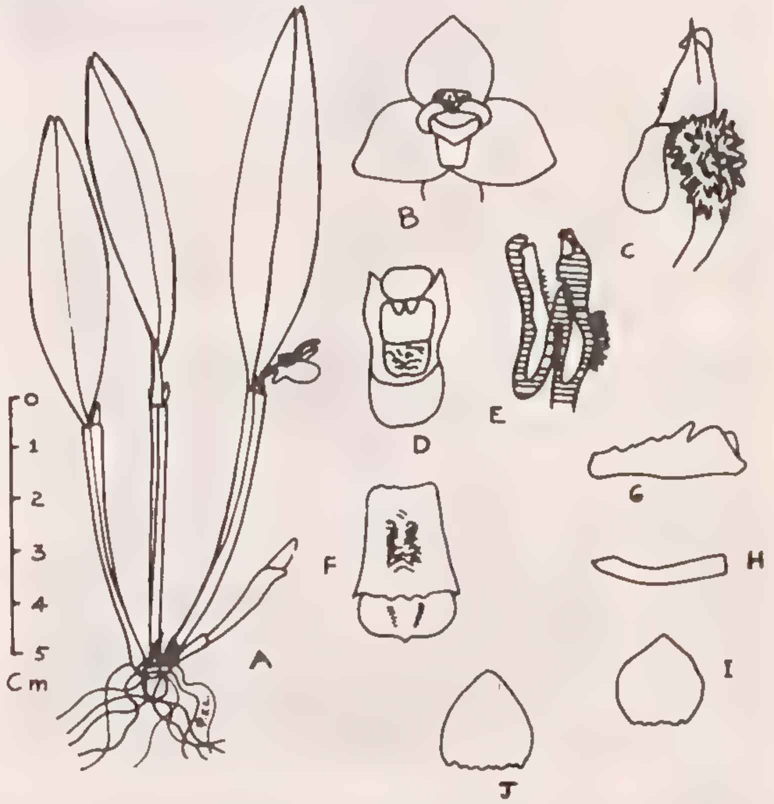


FIG. 1:

Cadetia collinsii P. Lavarack

A Plant
B Flower from front
C Flower from side petals and sepals removed
D Column from front
E Section of flower
F Labellum from above
G Labellum from side
H Petal
I Lateral sepal
J Dorsal sepal

(A to indicated scale x 3; B to scale x 5; C, D, E, F, G to scale x 10; H, I, J to scale x 5)

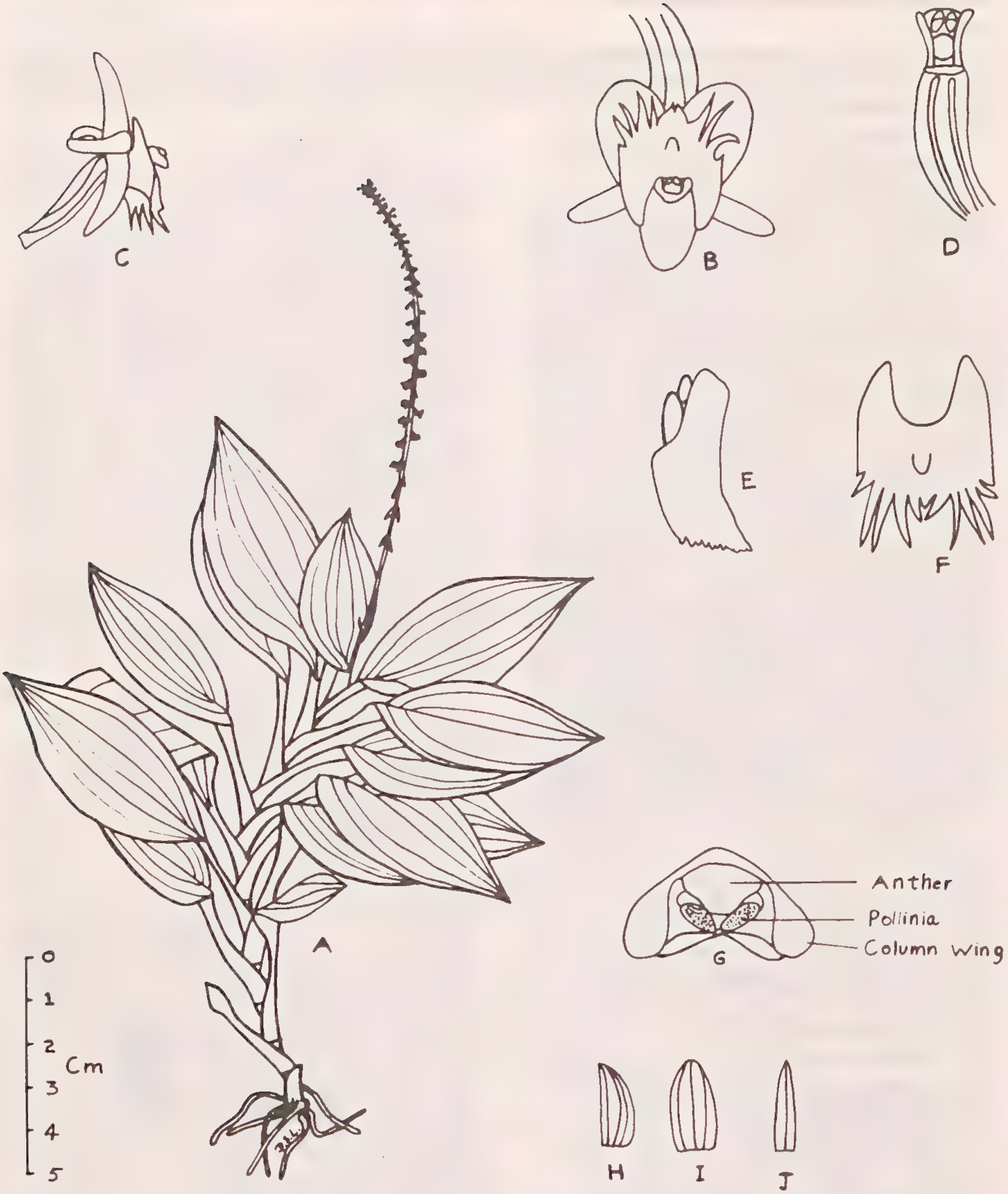


FIG. 2: *Malaxis fimbriata* P. Lavarack

A Plant
B Flower from front
C Flower from side
D Column and ovary from front
E Column
F Labellum from above
G Column from above
H Lateral sepal
I Dorsal sepal
J Petal

(A to indicated scale x 0.5; B, C to scale x 7; D, F to scale x 15; E, G to scale x 50; H, I, J to scale x 7)

Malaxis fimbriata **P. Lavarack, Austrobaileya 1 (4): 380-384 (1981).**

Stems decumbent with the new shoots arising from the apical half of the previous stem, up to 20cm long and 1cm in diameter, terete, partly covered with scarious bracts and the remains of the old leaves. Leaves 4—15cm on each stem, petiolate; petioles channelled, sheathing at the base 2.5—5cm long; lamina 7—12 x 3—5cm elliptical, broadest at the middle, acuminate, with 5 prominent veins. Inflorescence terminal, 10—25cm long, rachis about twice the length of the peduncle, rachis and peduncle purple, 1.5—3mm diameter, fluted; bracts of the peduncle about 5—7, reflexed, 5 x 1mm; floral bracts similar; rachis with numerous densley packed flowers; pedicels 7—10mm including ovary, reflexed. Flowers about 4mm diameter, purple in all parts. Dorsal sepal 2.5—3 x 1.5mm, ovate obtuse; lateral sepals 2—2.5 x 1.5mm, oblong, obtuse; petals 2.5—3 x 0.5mm, linear, at first spreading, later reflexing as the flower ages. Labellum 3 x 4mm, horseshoe shaped, the apical and near apical margins with 8—12 prominent teeth, the central pair of teeth short and broad 0.2—0.5mm long or reduced to a pair of small points on either side of a V-shaped notch; lateral teeth occupying about 1/3 of the lateral margin, 3—5 on each side, anrrow, acute, 0.8 — 1.2mm long; the pair of teeth furthest from the apex much shorter, the longest of the lateral teeth extending beyond the apex of the labellum; auricles triangular, obtuse, 1.5 x 1mm. Surface of mid part of labellum slightly concave. Column short and broad, about 1 x 0.8mm, with 2 broad and blunt wings extending above the anther. Stigma approximately square. Anther small, 0.5 x 0.5mm, broadly triangular. Capsule 5—8mm long.

This species appears to be related to *M. decumbens* (Schltr) P.F. Hunt from Papua New Guinea, but differs in having much larger leaves and a relatively large labellum with teeth exceeding the apex of the labellum. The differences between several species, mostly described by J.J. Smith and by R. Schlechter from the Indonesian Islands and the island of New Guinea, appear to be quite slight and it is obvious that this genus is in need of revision. Taking this into account, *M. fimbriata* appears at least as discrete an entity as many of the species previously described, differing in a combination of features involving the plant habit, length of pedicel and shape and ornamentation of labellum. According to Schlechter (1911 — 1914) it would fit in the section *Commelinodes.*

M. fimbriata may be distinguished from other members of the genus within Australia by the decumbent habit, evergreen leaves and purple flowers.

This plant has been observed in a small area on the catchments of Leo Creek, Pandanus Creek, Massey Creek and the Peach River above 500 metres altitude. It grows in leaf litter on hillsides or on large rocks in dense shade on the rainforest floor, forming large clumps. Flowering time is January to March.

Acknowledgements:

The author is indebted to Mr L. Pedley, editor of 'Austrobaileya', for permission to reuse certain material first published in that journal. I also wish to express appreciation to Rev. R. Collins and Mr B. Gray, both of Atherton, who provided very able assistance in the field and to the Australian Orchid Foundation, which financed field trips on which specimens of these species were collected.

Reference:

Schlechter, R. (1911—1914) — Die Orchidaceen von Deutsch Neu Guinea *Repert. Spec. Nov. Regni. Veg. Beih.* 1. 1079 pp.

Qld. National Parks
and Wildlife Service,
TOWNSVILLE, 4810

June, 1981

RECENT RIVERINA RECORDINGS

by A.E. Logan

Introduction: In this paper I wish to publish the following orchid recordings for Southern N.S.W. Of particular interest is the extension of the distribution of *Pterostylis alata* var. *robusta* (syn. *P. scabra* var. *robusta*). These recordings were made during normal bushwalking excursions and specialized orchid hunting trips. Month, year and location for each recording is listed.

Pterostylis alata var. *robusta*. Mt Brogden, Cocoparra Range (between Yenda and Rankin Springs) June, 1975. Previously only known at Galore Hill, near Lockhart, (A.E. Logan, "The Orchadian" 4-109 Dec. 1974) this species now has its distribution in N.S.W. extended by this latest recording. In June, 1975, Mrs. J.B. Jenkins (from Yenda) located a large *Pterostylis* colony on Mt Brogden but it was not until 1978 that I was able to visit the area and confirm the identification of the plants. The habitat of Mt Brogden is virtually the same as that at Galore Hill, with scattered colonies and single plants covering an area of 300 metres by 50 metres on the southern slopes. Further recordings of *P. alata* var. *robusta* in the Cocoparra Range is anticipated as there are numerous areas within the range which would contain similar habitats.

Pterostylis plumosa. Livingstone State Forest (near Wagga Wagga). October, 1979. Only one colony containing about 60 plants, of which about 40 were flowering, has been observed. These plants were growing on a gentle slope with a Westerly aspect. The colony was visited again in 1980 and the plant numbers appeared stable.

Pterostylis foliata. Carabost State Forest (between Holbrook and Tumbarumba). October, 1980. Keith Giles states that this species is reasonably common around Batlow ("The Orchadian" 2-144 March 1968) therefore this recording is not surprising. However, I consider it worth reporting as there appear to be very few recordings for this species. Only one small colony was observed which contained 8 plants of which 3 were flowering. It will be a matter of interest to see if this colony persists.

"Wodara"
Carabost
Wagga Wagga. N.S.W. 2650

21 July, 1981

DENDROBIUM Delicatulum Kraenzl.
(Section *Oxyglossum*)

by *T.M. Reeve & † P.J.B. Woods

In our first paper on section *Oxyglossum* (1980) it was noted that considerable confusion has existed concerning the taxonomy of this group of orchids and some of the reasons for it were discussed. The classification of *D. delicatum* is a good example and highlights many of the difficulties which taxonomists encounter when working on the Papua New Guinea flora.

The first collection of this species was made by F.C. Hellwig in 1888 from the Finisterre Range in what is now known as the Madang Province of Papua New Guinea. Apparently only a single specimen was preserved, sent to Berlin, and described by Dr Fritz Kraenzlin in 1893. The description of the plant was poor and no illustration was published. (**Note:** In 1894 Kraenzlin described another species from New Guinea jointly with Baron Ferdinand von Mueller and gave it the same name – *D. delicatulum.* However, this second name is illegitimate, being a later homonym.) In his monograph of *Dendrobium* (1910), Kraenzlin lumped *D. delicatulum* together with *D. subacaule* and *D. puniceum,* all of which are quite distinct species. Since he had used the name *D. delicatulum* twice it seems that he was determined to "sink" one of them, right or wrong! In 1912 Rudolf Schlechter correctly refuted this free synonymy of Kraenzlin's but incorrectly identified one of his own collections (No. 17990) as *D. delicatulum* (although this specimen has since been destroyed, Schlechter's brief description (1912) and drawing (Fig. 673, 1928) show it to be a form of *D. subacaule* in our opinion). The original and only Type specimen of *D. delicatulum* was destroyed in Berlin in 1943 and this made the confusion almost complete.

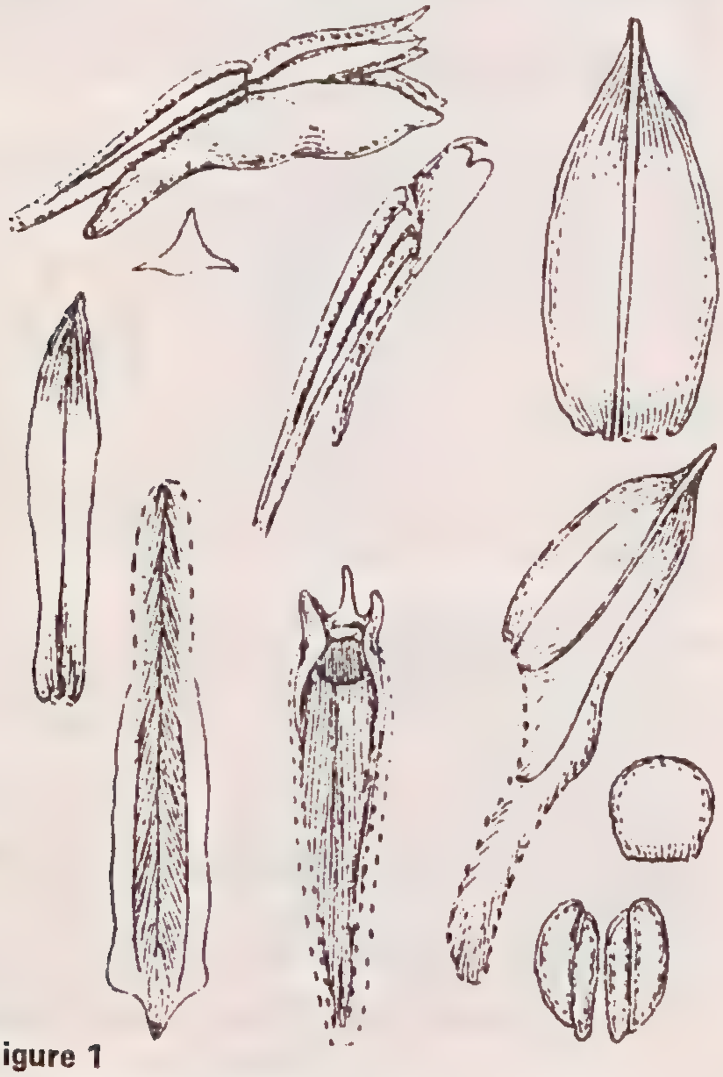


Figure 1
(Fig. 673 from Schelchter's Figuren-Atlas)
Dendrobium delicatulum Krzl.
This figure is referable to

We have gone back to Kraenzlin's original description and carefully compared it with the large number of living and preserved plants at our disposal. Only one species fits the description and we believe that the true identity of *D. delicatulum* has now been settled. A new Type (Neotype) selected from the mountains of the Madang Province, Papua New Guinea is now designated. The creeping branched rhizomes, the size and colour of the flowers, as well as other points in the original description all agree with the chosen Neotype. This article also delineates the 3 subspecies together with a key and further notes on distribution, flowering and cultivation.

Dendrobium delicatulum **Kraenzl. in Engl. Bot. Jahrb. 16:17 (1893); non F. Muell. & Kraenzl., 1894.**

Synonyms:

Dendrobium minutum Schltr in Fedde Rep. Beih. 1:531 (1912) et in Fedde Rep. Beih. 21: Fig. 672 (1928). **Note:** *Schlechter* 18754 sheets of the type collection sometimes have other manuscript names on them such as *D. "altigenum"* and *D. "gemma".*

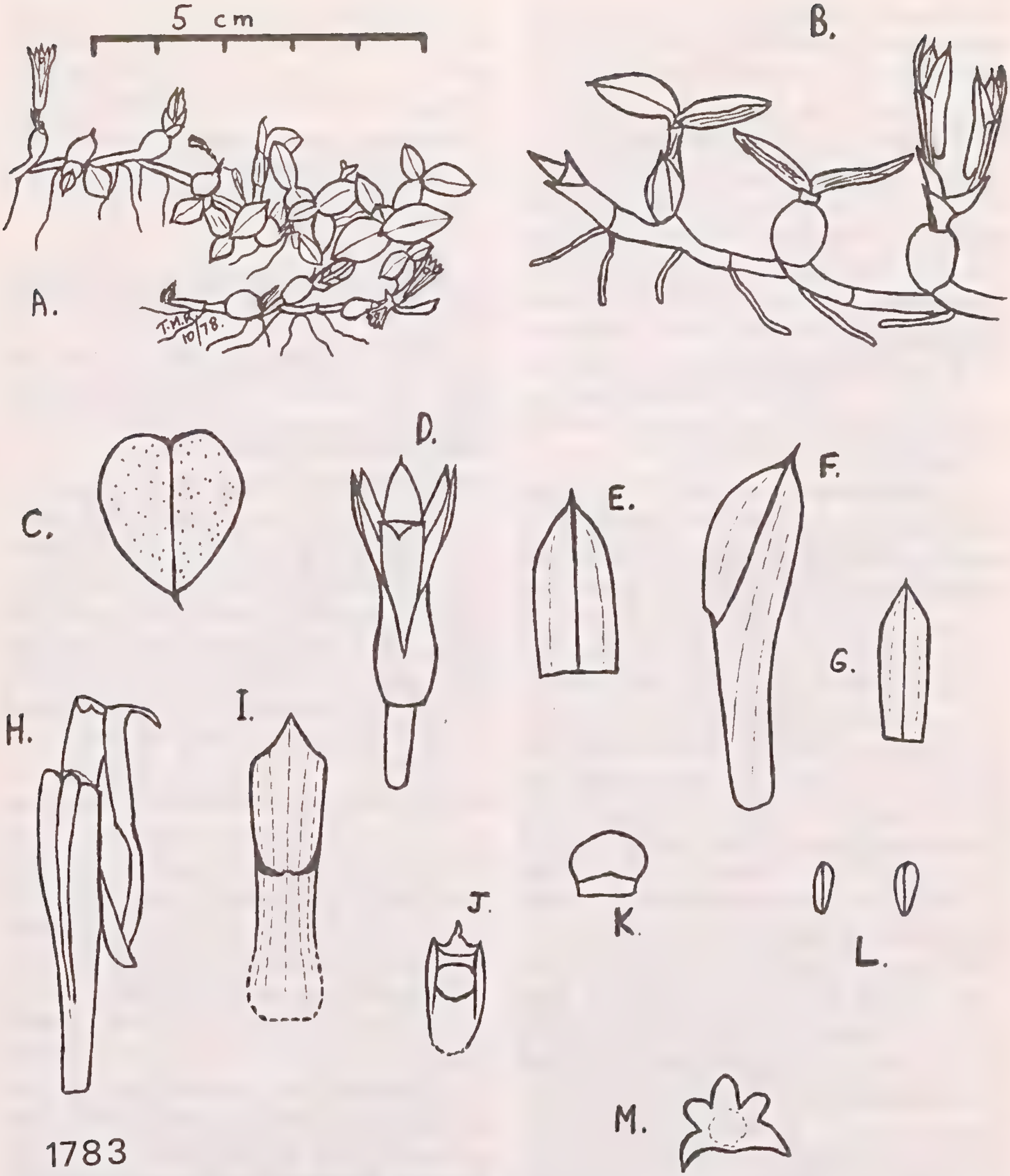
Dendrobium nanarauticola Fukuyama (*Dendrobium nanarauticolum* in error) in Bit. Mag. Tokyo 51: 900, Fig. 1 (1937); L.O. Williams in Bot. Mus. Leafl. Harv. Univ. 7: 141 (1939); S.F. Glassman in Flora of Ponape. Bernice P. Bishop Museum Bulletin 209: 117 (1952).

A widespread species recorded from Sulawesi or Celebes (Indonesia), New Guinea, Ponape (Micronesia) and the Solomon Islands. We recognise three subspecies.

1a Flowers coloured whitish-yellow – .... subsp. *huliorum*
1b Flowers coloured red, purple-pink, violet or blue 2
2a Flowers less than 1.2cm long – .... subsp. *delicatulum*
2b Flowers over 1.2cm long (only recorded from the mountains of Sulawesi) . . subsp. *parvulum*

(a) Subspecies *delicatulum:*

Small creeping mat-forming epiphyte, up to 3cm high; *roots* slender, 0.3–0.5mm in diameter; *rhizomes* prostrate, branched, approx. 1mm in diameter with 2–10mm between the pseudobulbs; *pseudobulbs* globose to ovoid (sometimes obovoid), usually reddish in colour, 2–7 x 2–7mm, each new



1783

Dendrobium delicatulum Kraenzl. subsp. *delicatulum* drawn by T.M. Reeve from living material collected at Inu Creek, Paiela, Enga Province, P.N.G., 1900m.

A	Plant (top view)
B	Plant (side view)
C	Leaf
D	Flower
E	Dorsal sepal
F	Lateral sepal
G	Petal
H	Pedicel/ovary/column/labellum
I	Labellum
J	Column
K	Anther
L	Pollinia
M	Ovary cross-section

A to indicated scale; B to scale x 2;
C, D to scale x 4; E-J to scale x 6; K-M to scale x 10.

stem bearing 2 leaves at the apex; *leaves* ovate to elliptic, apex mucronate, green with underneath surface usually purplish-red, 3–15 x 2–8mm; *inflorescences* arising from both leafless and leafy stems (from between the leaves), 1–3 flowered; *flowers* purplish-pink, violet or blue (rarely red) usually with a bright orange to orange-red apex to the labellum, 8–12mm long; *dorsal sepal* 4–6 x 1.5–2mm; *lateral sepal* 8–9.5 x 2–2.5mm; *petal* 4–5 x 1–1.5mm; *labellum* oblong-linear, apex acute and usually reflexed, with a small transverse callus in centre (difficult to see on dried specimens), 7–9 x 1.5–2mm; *mentum* obtuse at apex occasionally bilobed; *column* approx. 3 x 1.5mm; *column foot* 4–5.5mm long; *ovary* 5-ribbed, with ovary-pedicel 7–9mm long.

Original Holotype: Hellwig 303 (B, destroyed).

Neotype: *A. Millar* NGF 22862 in LAE (Isoneotype: K); Simbai, Madang Province, Papua New Guinea, 4800 feet a.s.l., 3rd May, 1967.

Distribution:

This is a widespread subspecies in New Guinea and adjacent islands and is also recorded from Bougainville in the Solomon Islands and from Ponape in the Caroline Islands group in Micronesia. It grows between 600 and 2500 metres above sea-level. In examining the various collections of this species a very interesting observation has been made. If a line is drawn running north – south through Laiagam (*Longitude:* 143° 30′ East), it will be found that violet (or purplish-pink) coloured form of subsp. *delicatulum* has been collected only on the eastern side of this line, and the blue coloured form has been collected only on the western side. Both colour forms have been collected within a 30 kilometre radius of Laiagam. An apparently uncommon red form has been collected once on Karkar Island in the Madang Province of P.N.G.

Violet form (sometimes light purple or purple-pink): Hellwig 303 Finisterre Mtns, Madang Province, 1700m, October 1888 (B, destroyed); **Schlechter** 18754 Bismarck Range, Madang Province, 2500m, November 1908 (E, K, L, BO, NSW, AMES); **Millar** NGF 22862 Simbai, Madang Province, 1450m, May 1967 (Neotype: LAE, K); **Hoogland** 9442 Cromwell Mtns. Huon Peninsula, Morobe Province, 2300m, July 1964 (CANB); **Paijmans** 1578 Lake Trist, Morobe Province, 2250m, May 1974 (LAE, CANB); **Reeve** Nos 120, 262, 297 Yogos, Wapenamanda, Enga Province, 2100m, May 1978, October 1978, February 1979 (LAE, E, K, L, CBG, UPNG, AMES); **Reeve** 434 Mt Murray, Southern Highlands Province, 2000m, April 1980 (LAE, E); **Craven (& Schodde)** 149 Lake Loloru, Buin, Bougainville Island, North Solomons Province, P.N.G. 700m, July 1964 (CANB); **Hosokawa** 6003 Mt Nanaraut, Ponape Island, Micronesia, 680m, August 1933 (TAI); **Hosakawa** 9543 Mt Troton, Ponape, Micronesia, August 1936 (L); **Takamatsu** 689 Kaporujo, Ponape, Caroline Islands, March 1936 (BISH, AMES).

Blue Form:

Brass 12772 Bernhard Camp, Indenberg River, Irian Taya (West New Guinea), February 1939 (L); **Jacobs** 8717 Mt Bosavi, Southern Highlands Province, P.N.G. 800–850m, September 1973 (LAE, L); **Reeve** Nos. 84, 119, 246, 287 Paiela, Porgera District, Enga Province, 1900m, February 1977, October 1977, February 1979 (LAE, K, L, E, CBG); **Reeve** 439 Tumundan, via Laiagam, Enga Province, 1900m, February 1981 (LAE, E, UPNG).

Red Form:

Ridsdale NGF 36702 Mom, Karkar Island, Madang Province, 900m, January 1968 (LAE, K, BRI).

Other Collections with colour not recorded:

Carr Nos. 16816, 16820 Alola, Northern Province, P.N.G. December 1935 (BM); **Cheeseman** 1336 Mt Eiori, Japen (Jobi Island), Irian Jaya, 600m, September 1938 (BM).

Notes: This subspecies, especially the blue form, is particularly beautiful and it is a magnificent sight to see the trunk of a tree covered (up to 1 metre across) with this plant in full flower. Flowering is non-seasonal but October to April appears to be the peak period south of the equator. The flowers last 3 to 4 months at Laiagam and plants grow well both on tree-fern slabs and on *Nothofagus* posts under both 30% and 60% shade. The only difficulty with this species is in establishing it and often losses occur at this stage. Once established it is a hardy and vigorous epiphyte.

(b) Subspecies *parvulum* (Rolfe) Reeve & Wood *comb. et stat. nov.*

Synonyms:

Dendrobium parvulum Rolfe in Kew Bulletin 127 (1899); R. Schlechter in Fedde Rep. 10:78 (1911) et in Fedde Rep. 21:150 (1925). *Sarcopodium parvulum* (Rolfe) Kraenzl. in Engl. Pflanzenr. Heft 45:322 (1910). *Katherinea parvula* (Rolfe) A.D. Hawkes in Lloydia 19: 96 (1956).

Holotype: *Koorders* 29565 B in K; Minahassa Province, Celebes (Sulawesi) Indonesia, January 1895.

Distribution: Only recorded from the mountains of the Minahassa Peninsula in Sulawesi. Apart from the Type specimen only one other collection has been recorded: *Schlechter* 20471 Mt Masarang, Minahassa Peninsula, 1200m, November 1909 (L, NSW, AMES).

Notes: The plants of subsp. *parvulum* are identical with those of the typical subspecies but the flowers are significantly larger in all of the above listed collections. (Flowers 1.2–1.5cm long.) The flowers are coloured violet-pink with a bright orange-red apex to the labellum. It may well be that the differences are not great enough to keep the two taxa separate but we will have to wait until further specimens are collected to make a better judgement. Ideally it would be best to obtain living plants to grow with the other subspecies under the same conditions.

(c) Subspecies *huliorum* Reeve & Woods *subsp. nov.*

Subsp. *huliorum* a subsp. *delicatulo* pseudobulbis maioribus viridi-flavescentibus vel flavescentibus, floribus albido-flavescentibus autogamis differt.

Subspecies *huliorum* differs from the typical subspecies in the following respects: It is a larger plant, growing up to 4.5cm high; *pseudobulbs* greenish-yellow to yellow in colour, 5–15 x 2–9mm; *leaves* usually more elliptic, green on both sides, 5–17 x 2–8mm; *flowers* uniformly whitish-yellow with yellow or purplish-red anthers, 7–10mm long, not widely opening and usually self-pollinating, sometimes cleistogamous.

Holotype: *T.M. Reeve* 306 in LAE (Isotypes: K, L, E, CBG, UPNG, AMES); Tani, Tari District, Southern Highlands Province, Papua New Guinea, 1700m, July 1980.

Paratypes: *Womersley* NGF 4853 Nondugl, Western Highlands Province, 1800m, April 1953 (LAE); *Reeve* Nos. 157, 298 Paiela, Porgera District, Enga Province, 1700m, April 1978, February 1979 (LAE, E, K); *Reeve* 440 Aiyura, Eastern Highlands Province, 1650m, March 1981 (LAE); *Reeve* 441 Mairi River, Kenangi, via Chuave, Chimbu Province, 1700m, March 1981 (LAE); *Reeve* 512 Tabaiya, Komo, Tari District, Southern Highlands Province, 1500m, July 1980 (LAE, E, UPNG).

Distribution: Subsp. *huliorum* is known only from Papua New Guinea and it has been collected in all the five Highland Provinces at several locations between Lake Kopiago and Aiyura. It is quite a common epiphyte in the Tari District of the Southern Highlands Province and the name commemorates the Huli people who live there. It grows between 1400 and 1800 metres.

Notes: Subsp. *huliorum* is probably more of botanical interest as its small pale and not widely-opening flowers make it one of the least attractive members of section *Oxyglossum.* Because of the self-pollinating nature of the flowers they do not usually last more than 2 or 3 weeks. Quite a nice show can be achieved by growing different colour forms of *D. delicatulum* mixed together on the same slab and for such purposes subsp. *huliorum* may find a place in collections. On cultivation the same comments as for subsp. *delicatulum* apply.

Acknowledgement:

We are grateful to Dr R.R. Mill, Botany Department, University of Edinburgh, for help with the Latin translation.

References:

Fukuyama, N. (1937) – *Orchidaceae Novae Micronesianae* a T. Hosokawa *Collectae.* Bot. Mag. Tokyo 51: 900-901, Fig. 1.

Glassman, S.F. (1952) – The Flora of Ponape. Bernice P. Bishop Museum – Bulletin 209: 117.

Hawkes, A.D. (1956) – *Katherinea,* a New Name for the Orchid Genus *Sarcopodium.* Lloydia 19: 96.

Kraenzlin, F. (1893) – in O. Warburg, Bergpflanzen aus Kaiser Wilhelms-Land. *Orchidaceae.* Engl. Bot. Jahrb. 16: 17.

Kraenzlin, F. (1894) – *Orchidaceae Papuanae* Oesterr. Bot. Zeitschr. 44:162.

Kraenzlin, F. (1910) – *Orchidaceae – Monandrae – Dendrobiinae* Part 1. Engl. Pflanzenreich Heft 45: 279, 322.

Reeve, T.M. & Woods, P.J.B. (1980) – A Preliminary Key to the Species of *Dendrobium* Section *Oxyglossum.* Orchadian 6 (9): 195-208.

Rolfe, R.A. (1899) – New Orchids. Kew Bulletin pp. 127-128.

Schlechter, R. (1911) – Zur Kenntnis der Orchidaceen von Celebes. Fedde Rep. spec. nov. regni veg. 10: 78.

Schlechter, R. (1912) – Die Orchidaceen von Deutsch Neu Guinea. Fedde Rep. spec. nov. regni veg. Beihefte Band 1: 482, 531-532.

Schlechter, R. (1925) – Die Orchidaceen der Insel Celebes. Fedde Rep. spec. nov. regni veg. 21: 150.

Schlechter, R. (1928) – Figuren Atlas zu den Orchidaceen von Deutsch Neu Guinea. Fedde Rep. spec. nov. regni veg. Beihefte Band 21: Tafel CLXXX, Figuren 672, 673.

Williams, L.O. (1939) – Orchid Studies X. Botanical Museum Leaflets, Harvard University. 7 (9): 141-142.

*
Dept. of Primary Industry
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Papua New Guinea

†
Royal Botanic Garden
Edinburgh Scotland

JUNE 1981

RESEARCH ON *MICROTIS*

Mr. R. Bates, whose article on pollen vectors and certain *Microtis* species appears on this page is engaged on a revision of the genus *Microtis* from all over the world. This will be published eventually in the *Journal of the Adelaide Botanic Gardens.*

To assist Mr. Bates in this project would readers please note that he requires flowers, whole plants or tubers of the following species.

Microtis oligantha (New Zealand)
M. pulchella (Western Australia)
Any apparently new species or unusual form of *Microtis.*

The specimens will be used for chromosome studies. His address: *38 Portmarnock St., Fairview Park, S.A. 5126.*

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New Registrations by the R.H.S. for March, April, May and June, 1981 — from lists in the Orchid Review, *August, 1981)*

Dendrobium

HYBRID NAME	PARENTAGE	REGISTERED BY (originator in brackets)
Star of Riverdene	Star of Gold x *speciosum*	V.F. & C.N. Jupp
Star Twist	*tetragonum x johannis*	V.F. & C.N. Jupp
Peach Glow	Golden Fleck x Hastings	D.M. Cannon (W. & G. Cannon)
Kim	Peter x *kingianum*	R.B. Bedford

Note: We have advance information from Mr W.T. Upton of three more *dendrobium* hybrids and from Mr & Mrs Nesbitt of a new *diuris* hybrid. These were not listed in the August issue of the *Orchid Review* but we have included them all in the Addenda to the revised edition of "A Checklist of Australian Native Orchids" which is published this month.

A CHECKLIST OF AUSTRALIAN NATIVE ORCHID HYBRIDS

Second Edition - September, 1981

This revised updated edition is now available from the Secretary, ANOS, P.O. Box C106, Clarence Street, Sydney. N.S.W. 2000 at $1.50 per copy (postage included).

It is an essential handbook in 16 pages for those interested in breeding native hybrids. Recognised natural epiphytic hybrids are also included.

Every registered hybrid up to and including July, 1981 is listed and cross-referenced under species headings to show the extent to which any species has been crossed with other species and hybrids. Get your name tags up to date with accurate names and keep them that way with supplementary reports in *The Orchadian* as new crosses are registered.

The following report, from the Annual General Meeting of ANOS is published as required by the ANOS Constitution (Section 21).

AUSTRALASIAN NATIVE ORCHID SOCIETY

Statement of Receipts and Payments
for the Year Ended 30th June, 1981

Receipts	1980/81	1979/80
Membership Subscriptions	5,334.14	4,354.10
Bank Interest	134.09	109.69
Sales of Badges	73.00	50.00
Sales of Orchadian — Back Issues	2,736.55	1,359.71
Sales of Check List	—	51.50
Donations	79.50	27.70
Advertising —		
Advertisements in Orchadian	410.00	523.78
Flasking Service and Sales	112.00	—
Miscellaneous	171.72	260.84
Reprints Vol. 1 of Orchadian	541.70	345.60
Sales of Other Publications	48.38	—
	9,641.08	7,082.92
Cash at Bank 1/7/80	1,313.07	2,588.55
	$10,954.15	$9,671.47

Payments	1980/81	1979/80
Orchadian Printing, Postage etc.	4,947.87	5,871.39
Secretarial — B. & C.	1,413.79	1,089.88
Advertising	180.00	150.30
Affiliation Fees	17.00	16.00
Miscellaneous Expenses		
Postage	295.84	205.00
Purchase of Filing Cabinet	—	102.20
Typewriter costs	15.00	50.00
Post Office Box Hire	32.00	32.00
Printing, Copying etc.	181.45	166.76
Bank Charges	20.00	11.00
Flasking Payout	166.00	183.00
Photographic Supplies	25.00	—
Orchadian Reprints	455.80	—
Refunds for back issues of Orchadian not available	13.00	226.39
Insurance Premiums	59.00	58.88
Badge Purchases	—	195.60
Reprint of Vol. 1 Orchadian	1,367.50	—
	9,189.25	8,358.40
Cash at Bank 30/6/81	1,764.90	1,313.07
	$10,954.15	$9,671.47

In addition to the above the Society has an Interest Bearing Term Deposit with Bank of N.S.W. of $1,500.00.

E Husted.

E. HUSTED — Treasurer. (Honorary)

AUDITOR'S REPORT

In my opinion the above Statement of Receipts and Payments for the year ended 30th June, 1981 is properly drawn up and is in accordance with the books of account of the Society, and gives a true and fair view of the cash position at 30th June, 1981.

Sydney, 17th August, 1981.

KENNETH OSBORN, F.C.A.
of Holmes and Harrington, Chartered Accountants.
Honorary Auditor.

Who's Who

THE AUSTRALASIAN NATIVE ORCHID SOCIETY OFFICERS AND GROUP CONTACTS:

A.N.O.S. Council:
President: N. Hilliger; Vice-Presidents: K. Edwards and E. Husted; Secretary: B. Butler; Asst. Secretary: M. Harrison; Editor: J.J. Betts; Asst. Editor: P. Weston; Councillors: F. Martin, G. Wells, D. McAlpine, I. Palmer.

A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

NEW SOUTH WALES

- *Sydney Group:* Tel.: (02) 53 5956
  Meets 8 p.m. 2nd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099
  Meets 8 p.m. 2nd Thursday, Stony Range Flora Reserve, Pittwater Road, Dee Why.
- *Newcastle Group:* Tel.: 48 9109 — Meets 4th Wednesday, John Young Community Hall, Thomas Street, Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- *Hastings Valley Group:* Tel.: (065) 85 6150 — Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Wauchope.
- *Central Coast Group:* Tel.: Secretary (043) 88 1785
  Meets 7.30 p.m. 2nd Wednesday at the Baptist Church Hall, Cnr. York & Frederick Streets, East Gosford.
- *Far North Coast Group:* Tel.: 87 1036
  Meets 8 p.m. 3rd Thursday at Ballina Bowling Club, Cherry Street, Ballina.

VICTORIA

- *Victorian Group:* Tel.: (03) 754 6585
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- *Darling Downs Group:* Secretary: Mrs J. Leyden, 66 Mort Street, Toowoomba, 4350. Tel.: (076) 34 2813.
  Meets 7.30 p.m. 3rd Friday at the Auditorium of the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- *Native Orchid Society of Queensland (Affiliated):* c/- P.O. Box 159, Broadway, Qld. 4000.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

SOUTH AUSTRALIA

- *Native Orchid Society of South Australia (Affiliated):* Secretary: E.R. Hargraeves, 1 Halmon Avenue, Everard Park, 5035 Tel.: (08) 293 2471 or 297 3724 — Meets 4th Tuesday, St.Matthew's Hall, 67 Bridge St., Kensington.

WESTERN AUSTRALIA

- *W.A. Native Orchid Study and Conservation Group (Inc.) (Affiliated):* Tel.: (09) 337 9614
  Meets 3rd Wednesday at the Department of Agriculture's Film Room, Jarrah Road, South Perth.

NORTHERN TERRITORY

- *The Orchid Society of the Northern Territory (Affiliated):* Secretary: Mrs G. Heinemann, Tel.: 85 4624, P.O. Box 38493, Winnellie, N.T. 5789

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Blue Mountains & District Orchid Society
  (Tel.: (047) 21 8126 — Mr K. Edwards)
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Cumberland Orchid Circle
Eastwood & District Orchid Circle
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December, 1981

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- The Genus *Coelogyne* in New Guinea

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Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

So much of this page is given to corrections that there is hardly room left to deal with stories about "flak" aimed at my choice of articles in recent issues. What with this and the complete lack of comment on the General Index to Volume 6 and the "Checklist" of Hybrids which were produced along with the new-look September issue, I am not overjoyed just now. Let's button up our flak-jackets, however, and get on with Volume 7 . . .

We now have a Beginners' Section — thanks to Don Barnham — but it is not labelled as such because we are all beginners and we are dead if we cannot or will not learn — dead as the people who want to exclude New Guinea, New Zealand — and of course Hong Kong — from our general interests. Elsewhere I have offered some advice to such people for alternatives to *The Orchadian* (see "Book Reviews").

But such negative thinking is dispelled by articles of the quality of Mike Harrison's and by the excellent photographs from Tony Chadim in the present issue. These things do not "just happen". The printed page does not appear in one blinding flash — as if by magic — on my desk. Explorers, growers and talkers who are contemplating writing for us might well take a close look at Mike Harrison on *Sarcochilus fitzgeraldii* (habitat and cultivation linked — and very well written too). This did not "just happen". Nor did Tony Chadim's studies and darkroom work. Nor Don Barnham's careful advice to beginners. Nor the preparation, typing, checking and re-checking of the Index! The only magic in all this is that it comes from voluntary, unpaid contributors! When Volume 7 is complete and bound in book-form of course their creative work will still be on hand to be admired and used — unlike this year's spring blooms. That has to be their reward — along with the knowledge that they are in good company when they publish in *The Orchadian*.

Non-botanical subject matter takes up 80% of this December issue. For the future, we shall see . . . .

FEEDBACK AND FOLLOW-UP

- Advancement of ANOS Judges

The ANOS Registrar of Judges, Mr Lloyd Bradford has recommended, and Council has approved (11/11/81) the accreditation of the following members as ANOS Judges

D. Barnham
M. Harrison
N. Stockton

- **Corrigenda**

Readers will have noticed some typographical and other errors in the September 1981 issue — most of them minor, but the following serious errors require apology and correction:

Page 3, column 1: Line 11 under "Nitrogen" the word "sufficient" should read "insufficient".
Page 13, column 2: Under "Wanted", line 3 should read "Encyclopaedia of Cultivated Orchids" (not "cultured").
Page 18, line 5: *"D. delicatum"* should read *D. delicatulum.*
Page 18, figure 1: caption should have indicated that Schlechter's Fig. 673 is referrable to *D. subacaule* and not to *D. delicatulum* (Schlechter's error, as indicated in the article).
Page 20, column 2: Under "Blue Form: Brass 12772", the locality should read "Irian Jaya" (not "Taya"), under "Subspecies *parvulum* (Rolfe) Reeve and Wood", the latter name should read "Woods" (referring to P.J.B. Woods of Edinburgh and not to J.J. Wood of Kew — a confusion very likely to occur if correction is not effected).
Page 21: Under "Research on *Microtis*", lines 2 and 3, "this page" should read "page 14".
Page 22, line 3: Insert "prior to" before "August 1981", lines 6 and 8 should read "V.F. and N.C. Jupp" (not C.N. Jupp) and line 11 should read "(W. & G. Cannons)".

- *Dendrobium x gracillimum* — **hopefully the last word (from Don Blaxell).**

I have written this to clarify the status of the name of this naturally occurring hybrid.

Steve Clemesha has published two articles on sub-specific taxa of *Dendrobium speciosum* in *The Orchadian*, Vol. 6, No's 11 and 12. In the first of these, he re-named *D. x gracillimum* as *D. x gracilosum.* Unfortunately this plant did not need re-naming, because the name *D. x gracillimum* is **not** illegitimate when used in species rank, but is when used in varietal rank (being pre-dated by both *D. speciosum var. nitidum* and *D. speciosum var. bancroftianum* as Steve pointed out). It was this latter situation which led Steve to misinterpret a comment I had made on his first draft of his *D. speciosum* article.

However, Steve's unnecessary re-naming in his second draft of his article should have been deleted by me (your Hon. Referee) before the article was published. Unfortunately, I overlooked its publication in the article and caused confusion in the minds of many people as to the correct name of the plant concerned. I must, therefore, apologise to all the readers of *The Orchadian*, the members of ANOS and the Council of ANOS for this unfortunate oversight. As I said before, the major fault lies with me, with a minor component attributable to Steve for misinterpreting a hypothetical comment of mine on his manuscript.

I have been in correspondence with Steve on this matter and he has seen a copy of this letter before publishing.

5 November, 1981

D.F. Blaxell
National Herbarium of N.S.W.
Royal Botanic Gardens, Sydney

THE BASICS OF NATIVE ORCHID GROWING – I

by Don Barnham

When the matter of culture for our own native orchids is being discussed among growers it is apparent that many do not understand the fundamentals of the art. It is not only the novice grower who has yet to learn the techniques that nature requires to be able to grow his or her orchids in the manner necessary to produce healthy and vigorous plants; but some who have been growing for many years have not come to grips with the simple facts.

How does one learn the facts? It is often asked "Where can I buy a book that will tell me what to do?"

To the best of my knowledge the answer is that there is no one publication available that deals with all the facets of the cultivation of Australian native orchids. The matter is quite complex when compared with the simple clues required in growing garden plants in a plot of ground in the backyard, but not really difficult if the individual orchid's natural habitat is first known.

Habitat. covers location, altitude and whether it grows naturally on trees, on rocks or in the ground. If on trees it is classed as an epiphyte, if on rocks — a lithophyte and in the ground — a terrestrial.

Where does the new grower begin? It can be fairly safely said that quite often he or she first acquires an orchid and then has to find out how to grow it. So the answer to the question is: firstly find out what type of orchid you have, or are thinking of getting; that is: is it an epiphyte, a lithophyte or a terrestrial? Secondly, will it grow easily in your locality? Thirdly it is necessary to know to which genus the orchid belongs as this will play a big part in knowing what conditions the grower will have to provide.

The novice grower would be well advised to start a collection of orchids with members of the genus *Dendrobium*. With few exceptions these are the easiest to grow, but make sure the plants you select are suited to your locality, as some will grow in fairly low winter temperature, whereas others (those from the far northern coastal areas of Australia) will not prosper in a temperature below about 18° C.

As an indication to Sydney's temperatures it is well to note that the night temperature starts to drop below the 18° C level, particularly in the outer western suburbs, about March and does not rise permanently above this level till the following November, which means that the orchids from the Cape York Peninsula area of Queensland, with the exception of those from the Atherton Tableland must be grown with artificial heat in Sydney during that seven-to-eight-month period.

From now on it is to be assumed that any reference to the culture of an orchid applies to what is grown in the Sydney area. Growers outside this area can of course, fairly readily make any adjustment necessary to suit another climatic zone.

Accepting that the orchid to be grown will be a *dendrobium* and that it will be "grown cold" (meaning that it will not receive any artificial heat during cold weather) the first step is to select one that will suit your requirements. Some can be grown on trees in the garden or on slabs of hardwood, ironbark, cork or fibre that can be hung from the rafters in a shadehouse; but for the beginner an orchid that can be grown successfully in a pot presents less trouble as it will generally require less attention as to watering in dry, hot windy weather.

If an attempt is made to attach an orchid to a tree it is necessary to select a tree that has permanent bark. It could be a jacaranda or one of the pittosporum species, not one that will shed its bark periodically, for it is obvious the orchid will also be shed from the tree as the outer layer of bark falls away.

Growing a plant permanently fixed on a tree has a lot of disadvantages in that it will tend to become neglected and when in flower cannot be transported to a show place and seen to advantage.

Dendrobium Growing. Having elected to start with one or more members of this genus it is just as well to master a few facts about this family. Firstly, the name DENDROBIUM is a latinised word meaning "tree life" although dendrobiums in their natural habitat are not all confined to growing in trees as epiphytes. Some are lithophytes and there is at least one Australian dendrobium that is a terrestrial.

Throughout their range, from India to the mid-Pacific ocean region and down the eastern coast of Australia to Tasmania, there are many hundreds of species of this orchid, and in Australia alone there are over fifty.

Of these there are something like thirty that will grow cold in Sydney. A large number of these will grow in a pot of porous compost while the rest are better attached to a slab of suitable material.

So, let us begin with one that is very easy to grow, is readily purchased from an orchid nursery and likes to be grown in a pot. Its flowers have a colour range from pure white to dark red, are produced in profusion from late winter to mid spring, and frequently give off a delicate perfume.

The plant is *Dendrobium kingianum.* An orchid classified as a lithophyte, or rock orchid. Its natural habitat spans from just north of the Hunter River in N.S.W. to central Queensland. It is essentially a plant of the ranges, growing on rock faces in reasonably moist locations where it is protected from the hot sun and drying winds, reaching its best development on rock ledges where tree leaf litter has gathered and composted over many years to form a mat some twenty to thirty millimetres thick, making an ideal situation where drainage is perfect yet providing ample nourishment for the plant.

Dendrobium kingianum is an orchid of many forms and varieties. One such form commonly called "var. *pulcherrimum*", is the dwarf of this family growing to no more than 90mm high, while some, from the Tweed River valley area in northern N.S.W. attain a height of something like 500mm.

The best forms of *D. kingianum* appear to be the ones found in the highlands of the mid north coast of N.S.W. — a form that grows to a height of some 150 to 200mm. They are usually compact growing plants with flowers measuring to 25mm across and produced in profusion.

In cultivation *D. kingianum* should present the grower with few problems; its requirements are simple. Assuming it is to be grown in a pot, plastic or terracotta, select one that will accommodate the plant comfortably leaving no more than a 50mm space between plant and pot side. A 100 mm pot would be ideal for the average sized plant. Use the squat type of pot for preference as this orchid does not develop an extensive root system and therefore does not need a deeper one, and when fully grown there is less chance of it becoming top heavy.

The Medium. The material in which the orchid is to grow is referred to as "compost" or "medium". It should consist of a mixture of fibrous materials and some solid substance to perfect the drainage. The whole must be devoid of any form of soggyness and able to disperse excess water readily.

Standard cymbidium orchid compost, which can be purchased at most plant nurseries, is quite suitable for *D. kingianum*, but it is advisable to remove any lumpy material over 10mm in size as anything larger is too bulky for this orchid.

You may prefer your own compost, and it can be made up in the following manner. To two parts charcoal and two parts fir-bark add one part leaf-mould and one part German peatmoss. The charcoal and fir-bark to be a size that will pass through a 12mm (½") sieve. The best type of leaf-mould is that which can be gathered from around the base of gum trees in the bush areas of Sydney's outer northern or southern suburbs. The leaf-mould should be sieved to remove large particles like undecayed leaves, sticks, stones etc. The charcoal, fir-bark and leaf mould must also be sieved to remove any dust or very fine particles as these tend to settle in the bottom of the pot and clog up the drain holes. The peatmoss can be used as purchased except for any large lumps that may be in it; these can be broken down into smaller particles.

The peatmoss must always be in a moist state before being mixed with the other materials. Place the required quantity of peatmoss into a container, add sufficient water and stir until all is very wet. Let it stand for ten minutes or so and then squeeze out the excess water. It is then ready to be added to the other components to make up the "compost".

Once prepared this compost which can be stored in a sealed plastic bag, will remain moist and ready to use for many months. It is to be noted that all compost should be in a moist state when being used for potting.

Potting. In potting the orchid it is advisable to first place drainage material to a depth of 25mm in the bottom of the pot. Such material can be any hard substance like sandstone, charcoal or scoria. The size to be just large enough to prevent it falling out through the drain holes of the pot. Place compost over the drainage to a depth of 25mm and press it down firm. The orchid can then be placed in the pot, first having cut back any dead or damaged roots. More compost is now added to the pot gently working it in between the plant's root system, finishing the process about 15mm below the rim. Gently tap the bottom of the pot on some firm surface to settle the compost and thus complete the potting process.

November, 1981

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OF FERTILIZERS AND NATIVE ORCHIDS — PART 2: Nutrient Balance

By Noel J. Grundon

No one worries about healthy plants. But when plants fail to grow vigorously and flower abundantly, every orchid grower becomes concerned. Like every other plant an orchid will slow down or stop growing whenever any of the many factors which contribute to its well-being gets out of balance. One of these factors is the supply of mineral elements. In Part 1, I listed the elements which every plant must have to grow vigorously and flower abundantly and discussed the role each mineral nutrient performs in the plant. In this article, I will discuss the concepts of the essentiality and interdependence of nutrients and the amounts required with a view to supplying a balanced diet to the plant.

The Concept of Essentiality:

In Part 1, I listed sixteen elements which ALL members of the plant kingdom require to grow vigorously and reproduce. By analysing plants and determining the chemical elements present, we know that over sixty elements have been detected in plants. However, the presence of an element in a plant does not mean that the element is essential or that it performs any necessary function. In fact we know that a plant will contain traces of every element present in its environment. Why then is one element considered essential for plant growth and others excluded?

Before an element can be considered to be essential, it must pass three criteria:

1. The plant must be unable to complete its lifecycle (flower and produce seed or produce other propagating organs) in the absence of that element.
2. The element must have a specific function which cannot be performed by any other element.
3. The effect of the element on the plant must be direct.

For plants such as orchids, sixteen elements have passed these criteria. These elements are carbon, hydrogen, oxygen, nitrogen, potassium, phosphorus, calcium, magnesium, sulphur, iron, copper, zinc, manganese, boron, molybdenum and chlorine. In Part 1 I listed the functions these elements perform in plants. You can see now why these elements passed the criteria of essentiality. Therefore a balanced diet for an orchid plant must contain all the essential elements. Furthermore the diet needs to supply only these essential elements and the orchid will grow vigorously and flower abundantly.

The Concept of Nutrient Interdependence:

We are all familiar with the advertising "blurbs" put out by fertilizer firms. For example, "nitrogen promotes shoot growth", or, "phosphate stimulates root development"; and also, "potash boosts flower production". Remember that these statements are written to encourage you to buy that fertilizer and they should not be taken as exact truths. Yes, nitrogen will promote shoot growth, but shoots require more than nitrogen alone to grow vigorously. Root development is stimulated by other nutrients as well as phosphorus, while there is no evidence that only potassium promotes flowering.

Consider a plant and how it functions; each part of a plant depends on all other parts functioning correctly. The shoots act primarily as solar collectors to trap the energy of the sun and provide a site for the conversion of carbon dioxide and water into energy-rich sugars, starch and other compounds. The roots anchor the plant and are the primary absorbing organs for water and mineral nutrients. Without the water and mineral nutrients absorbed by the roots, the shoots can not produce sugars and other energy-rich compounds. Without the sugars, the roots have no energy base with which to grow and absorb water and nutrients. The flowers similarly require water and mineral nutrients absorbed by the roots as well as energy-rich compounds manufactured in the shoots. So to grow roots and shoots and flower abundantly an orchid plant must act as a single interdependent unit.

Within the plant, the functions of the nutrient elements are interdependent also. In my previous article, I listed the functions of each element. Notice how the functions of the elements are intertwined — each element depends on all other elements being present so that it too can function correctly. Consider the function of molybdenum. Plants absorb nitrogen mainly in the form of nitrate. Before nitrate can be used by plants, it is converted into reduced nitrogen compounds. This conversion requires energy which is supplied by "burning" sugars produced in photosynthesis. Phosphorus is required for the transfer of energy both during photosynthesis and the conversion of nitrate into reduced nitrogen compounds. Chlorophyll plays a central role in photosynthesis, assisted by many enzymes. Magnesium, nitrogen, carbon, hydrogen and oxygen make up the chlorophyll molecule, while carbon, hydrogen, nitrogen, oxygen and sulphur make up the enzymes. To function, enzymes need copper, zinc, manganese and iron. To form the enzymes, chlorophyll and many other compounds, reduced nitrogen compounds are required which are formed only when molybdenum is supplied.

We have come the full circle. Just as the roots and shoots of a plant depend on each other for maximum growth, so the functions of each element inside the plant are dependent on the functions of all other nutrient elements. Therefore, vigorous growth and abundant flowers can be expected only when all essential elements are supplied.

The Amount of Nutrients:

By analysing plants we have obtained an idea of the approximate amount of nutrient that a plant requires for growth. Consider a very large *Cymbidium madidum* which weighs 100 kilograms. Now that is some orchid, 220 pounds dripping wet! But about 85 kilograms (188 pounds) of the plant is water; only about 15 kilograms (32 pounds) have been produced from the essential elements listed in previous paragraphs.

The approximate amounts of each essential element would be as follows: oxygen 7200 grams; carbon 6300; hydrogen 900; nitrogen 210; potassium 150; calcium 75; magnesium 30; phosphorus 30; sulphur 15; chlorine 1.5; iron 1.5; manganese 0.75; boron 0.3; zinc 0.3; copper 0.09; molybdenum 0.0015.

You can see how some elements are present in much larger quantities than others. For example, there is about seven times as much nitrogen as phosphorus, and about 20,000 times as much phosphorus as molybdenum. But all elements are of equal importance for healthy growth. Without that whiff of molybdenum all the nitrogen in the world is useless, as well as all the other elements, as pointed out in the section on interdependence.

Many fertilizers contain "valuable trace elements" about which the advertising makes an enormous fuss. And so it should. These trace elements are no less important for vigorous growth just because they are required in small quantities. In fact, the division into major or macronutrients and minor trace elements or micronutrients is purely for the convenience of classification by man and has no relationship to the assumed importance of any particular element for vigorous growth by plants.

The macronutrients are carbon, hydrogen, oxygen, nitrogen, potassium, phosphorus, magnesium, calcium and sulphur, while the micronutrients are iron, chlorine, manganese, zinc, copper, boron and molybdenum. A balanced diet contains all these elements, and aims to supply them in approximately the amounts required by an orchid plant.

4 Jean Street,
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SOME ORCHIDS OF THE HASTINGS VALLEY

A Checklist with Habitat Descriptions

by Lex Barton

Since January 1979 I have been recording orchid species and hybrids that occur naturally in the Hastings River Valley, New South Wales.

Habitat varies tremendously from coastal sand dunes and heath scrubs to rainforests, hardwood forests and swamps that occur along the coast and foothills through to the headwaters of the Hastings River at the top of the range.

This is not a conclusive list of orchids found locally but rather a progressive report presented in alphabetical order as a handy checklist of the species so far located.

Alphabetically the first is *Acianthus fornicatus*, a little charmer that is common in moist areas along timbered gullies from near the coast to the top of the range. Flowering commences as early as May and can continue for several months.

Less common but equally delightful is *Arthrochilus irritabilis*, a hardy little plant only located in three areas. Leaves usually appear towards the end of or after flowering which occurs in December. One plant in my collection carries over 30 flowers with some unopened buds.

In the genus *Bulbophyllum, B. aurantiacum* heads the list. Quite a common species in and around the rainforests some distance from the coast, it flowers from February through to about May. *B. crassulifolium* forms extensive mats on rocks and trees in and around rainforests. Flowers are similar to *B. aurantiacum* but are pale yellow in colour and occur from February to April. Less frequently located is *B. elisae* which like the previous two grows on trees and rocks. A number of attractive green flowers are produced from about March and can continue for a couple of months depending on altitude. *B. exiguum* can cover large areas with its small pseudobulbs. It is found on trees and rocks with the largest plants more often on rocks. Up to 5 pale yellow flowers are produced on a spike commencing about March. Last of the *Bulbophyllums* found locally is *B. minutissimum*, a plant which forms a network of tiny pseudobulbs over its host.

Caladenia catenata is the only member of this large genus found to date. It covers a wide range throughout the Valley. One colony quite close to the coast has a predominance of very large double flowered plants. Flowerings usually commence in June or July.

Those quaint duck shaped flowers of *Caleana major* fascinate most people. Although *C. major* enjoys a varied distribution I have found only one colony growing in heath country quite close to the coast. Flowers occur about September in this area.

A large colony of *Calanthe triplicata* in full bloom will create a memory to be long cherished by those who find it. The large clusters of white flowers strike a beautiful contrast against its dark surroundings. Flowers in December.

Calochilus campestris is next on the list but although widespread it is seldom seen. Flowers September and October. More localised is *C. paludosus* a species that frequents the margins of swamps in higher country and flowers about December-January. Only one plant of *C. robertsonii*, flowering in December, has been recorded and this plant did not appear the following season.

Chiloglottis reflexa is one of the largest colonisers found locally with areas at times larger than one square metre, packed solid with plants but alas only a few of these will be in flower. Flowering can occur at any time of the year.

Well shaded, moist areas with a good covering of a rich humus is the preferred habitat of *Corybas aconitiflorus.* By carefully removing this humus one can see the many deviations taken by the immature shoot in its search for light. A white form is apparent in widely scattered localities. The single leaf virtually cradles the flower which emerges in June and July. *C. fordhamii* appears to be confined to a small area along the coastal swamps. Flowering occurs in August and September. There are another two Corybas species growing locally but I am having a few identification problems.

Cryptostylis erecta is very common and widespread from the coast to the foothills. Under ideal conditions the rhizomatous tubers spread underground and send up new leaves along its length. Consequently large colonies are common. Flowers from November. *C. leptochila* is restricted to the foothills and ranges. It does not form large colonies as does *C. erecta* or *C. subulata* even though it multiplies vegetatively as well as by seed. Flowers occur in December. Last of the genus found locally is *C. subulata* a plant that forms enormous colonies, particularly around the margins of swamps in high country where it is not uncommon to see 50 flowering plants in a 2-metre square area. *C. subulata* enjoys a wider distribution than *C. erecta* or *C. leptochila* as it grows right on the coastal belt and through to the top of the range. Flowers from November through to May or June.

Cymbidium madidum has reached its southernmost point of distribution here and is not at all common. *C. suave* is abundant with many plants achieving enormous proportions. For both species, flowering commences around November.

The Genus *Dendrobium*

This genus is well represented throughout this region with some 12 species and 3 hybrids confirmed and a couple of unconfirmed hybrids. *D. aemulum* is one of the first to flower each year, it is common and widespread. The "brushbox" and "ironbark" forms are both evident. Flowers from July. *D. beckleri* is seen in profusion in brushwood forests and as many seedlings are found one could assume that they have an active pollinating agent. In an area at the top of the range and growing on River Oak (*Casuarina* sp) along the watercourses one can find *D. cucumerinum*, a rewarding plant to grow as it offers two or more flowerings a year. Whilst not common, *D. X delicatum* is found often enough. It is a natural hybrid between *D. speciosum* and *D. kingianum*. Niggerhead Beech (*Nothofagus moorei*) is the almost exclusive host of *D. falcorostrum*. Distribution is restricted to a small area near the top of the mountain range. Just about every patch of brushwood has at least a few plants of *D. x gracillimum* a variable hybrid that prefers the fringes of the rainforests. Again, not common although some forests harbour a large number of plants. It will grow on rocks as well as trees. *D. kingianum* is common, widespread and variable, colours range from white to red with all the intermediates and combinations one could hope for. The attractive little sprays of white flowers of *D. linguiforme*, from a distance, give the appearance of cottonwool adhering to its host. A very common and widespread species that occurs throughout this region.
Although *D. pugioniforme* can at times be found in the foothills they attain their greatest size when growing on rocks at medium to high altitudes. A very shy flowerer that secretes its blooms under a mass of leaves so that very few flowers are seen. *D. X. suffusum* is a rare natural hybrid which has *D. gracilicaule* and *D. kingianum* as its parents. The type plant came from this area. An extremely variable plant and flower whose colour ranges from white through to yellow. Another uncommon orchid is *D. tenuissimum* a

small terete leaved plant that usually grows on the shady side of trees with its roots well covered with moss. *D. teretifolium* grows in abundance throughout the region in rainforest type environs. Although the largest plants grow on trees they are frequently found growing on rocks. Another species that enjoys a wide distribution is *D. tetragonum* whose only preference appears to be Paperbark (*Melaleuca* sp) but it is not confined to these trees as it also grows on rocks and trees in and around rainforests. Flowers vary considerably in size and colour.

From November to about February the forests are brightened considerably by the appearance of *Dipodium punctatum*. The distribution of this species does not appear restricted by any means except that it does not grow in rainforests.

Locally the terrestrial *Diuris abbreviata* seems to be confined to a small swampy area close to the coast. An attractively shaped flower that opens about August-September. *D. aurea* is very widespread but the best flowerings seem to occur quite close to the coast. Flowers around September.

As *Epipogeum roseum* has a very short life cycle above ground very few sightings are made. Only one colony of this saprophytic orchid has been located. The flower stem emerges from the ground in a curled up position, then very quickly unfurls to allow the crystalline flowers to open. The flowers are apparently self pollinating as the ovaries are expanding as the flower opens. Within a few days the capsules split, the seed is dispersed, the fragile, hollow stem breaks off and there is not a trace, above ground, of the plant. Flowers in December.

March is *Eriochilus cucculatus* month. All plants located have grown under moist conditions at or near the top of the range. As with *Arthrochilus irritabilis* the leaves appear towards the end of or after flowering.

Galeola cassythoides is found scattered throughout the hardwood forests. Some plants grow into large specimens with well over 50 vines and many hundreds of flowers. Flowering occurs in September and October. Surely one of the most attractive orchids in Australia is *G. foliata* whose large yellow flowers are up to 55 mm wide and beautifully contrasted by that remarkable red labellum. Three colonies have been located to date; which is an extension of their previous southernmost point of distribution. Flowers December and January.

Gastrodia sesamoides appears confined to open forests some distance form the coast. It is never numerous with plants growing singly or in twos. Flowers in September and October.

Whilst *Glossodia major* is never abundant *G. minor* grows in profusion. Both species grow together in the heathscrub very close to the coast. Flowering commences in September.

The genus *Liparis* is represented by only two species: *L. coelogynoides*, which grows on trees and rocks some distance from the coast at the higher altitudes (flowers from January) and *L. reflexa* which is very common and widespread throughout the valley. It is most commonly seen growing with *D. kingianum* on rock faces where it forms dense mats. Flowers from March.

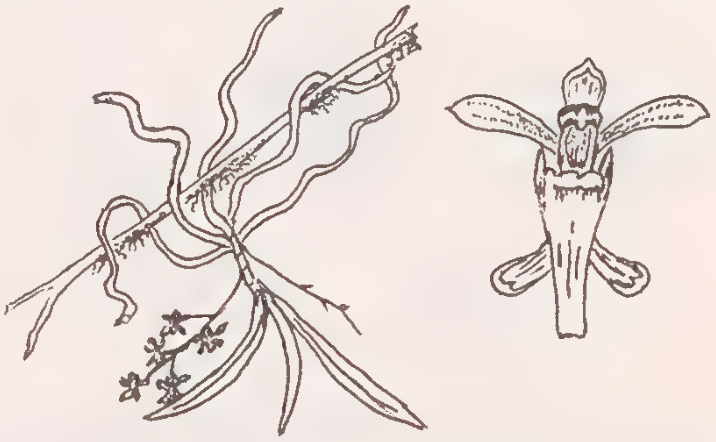
It is hard to tell if *Lyperanthus suaveolens* is a common plant as it blends so well with the native grasses amongst which it grows that detection is difficult. All plants located grew in coastal heathland and flower in September.

The diminutive flowering *Microtis unifolia* is a common plant for those willing to seek it out. Its flowering season is somewhat prolonged but does not appear greatly affected by altitude or proximity to the coast.

Although restricted to a couple of small areas *Oberonia palmicola* is fairly common within those boundaries. Found close to running water, growing on trees, palms or occasionally on rocks, it flowers from March.

The elusive *Orthoceras strictum* has only yielded one plant; so little is known of its habits. It grew in full sunlight in a well grassed naturally cleared area. Flowered in January.

Often overlooked but very common is *Papillilabium beckleri* which grows on the outer twigs of small trees near running water or in rainforests. A colourful little orchid that would be very popular were it 100mm across. Flowers around August-September.



Papillilabium beckleri

A littoral rainforest appears to be the only local area where *Peristeranthus hillii* grows. This is another species that is not recorded south of the Hastings region.

Plectorrhiza tridentata knows virtually no bounds but does show a preference for small trees near watercourses. This is another tiny flower with beautiful shape and colour. The plant is most frequently seen hanging by one or two roots with the remainder a tangled mass around the plant. Flowering commences around August.

To date 7 species of *Prasophyllum* have been recorded. *P. australe* grows in a swampy area at the head of the Hastings Valley. Flowers from December. Around the drier margin of the same swamps grow the diminutive *P. densum*. Again flowering occurs in December. *P. elatum* grows in the coastal heathland where both colour forms are evident. Flowers August to September. Three colonies of *P. flavum*, all closely situated around the perimeter of a sphagnum swamp have been located. As with most saprophytes this orchid spends the majority of its yearly cycle underground, only surfacing for about 4 weeks in December when it flowers. Growing under similar conditions to *P. densum* are *P. fimbriatum* and *P. odoratum*. The significant feature of *P. fimbriatum* is the ciliate labellum that flickers with the slightest zephyr. *P. odoratum* has a very spicy aroma. Both flower in December-January. Last but not least is *P. viride* another small flowered species that is found over a wide range and has an extended flowering period.

Pteroceras spathulatus is a small plant that is confined to the mountain streams where it grows on small trees overhanging the watercourses. It has an attractive flower that, in cultivation, may bloom two or more times a year. As only one or two flowers per spike open at any time flowering is over a prolonged period.

The Genus *Pterostylis*

To head off the *Pterostylis* we have *P. baptistii*, a common species in moist shady gullies ranging from near the coast to the foothills. One colony some distance from the coast had flowers open as early as 17th February whilst others nearer the coast will hold their flowers until at least the 12th December. *P. curta* usually favours open type forest away from the coast and out of the gullies where it gets good drainage. The twisted labellum makes it easily distinguishable from the other *Pterostylis* species found locally. Flowering commences in September. *P. decurva* grows at the top of the range under a variety of conditions. Some plants were observed growing in the Niggerhead Beech (*Nothofagus moorei*) forests, others grow in a swampy region where there is considerable moisture. February is the month when most flowering occurs. *P. falcata* dwells in the sphagnum swamps in running water around the head of the Hastings Valley. A few colonies have been located; two with good size colonies. Flowers December and January. *P. grandiflora* grows closer to the coast in those damp well-shaded gullies usually rich in humus. Flowering commences in June or July. Of scattered occurrence but never plentiful is *P. longifolia*, found growing under a variety of conditions from quite close to the coast up to the ranges. Flowers August to October. *P. nutans* is very common and widespread, can be seen growing in very sheltered or exposed areas from the coast to the foothills. Flowers from July. *P. nutans* var. *hispidula* however is not as common nor as wide ranging but is restricted to a few localities high up on the mountain range usually in a damp situation in swampy conditions. A smaller flower than *P. nutans*, flowering commences about February, six months earlier than the species. Two widely separated and small colonies of *P. obtusa* are the only recordings to date; one grew in dry hard open forest country at the top of the ranges whilst the other was found in the lower foothills amongst Forest Oaks (*Casuarina* sp). Flowers were evident in March and June respectively. Another to be found around the highland swamps is *P. parviflora*. Some plants grow in the drier perimeter of the swamps whilst another colony grows in stagnant water and sphagnum moss well in the swamp. The swamp dwelling form appears to be a variety as there are some differences. Flowering commences in December. It is interesting to note the differences in size, colour and shape of the local *P. pedunculata* when compared to plants from further south in N.S.W., also Victoria and S.A. A common and widespread species found growing through to the foothills. Flowering occurs from July.

Pterostylis decurva

Moderately common in the rainforests is *Rhinerrhiza divitiflora*. Usually found some distance from the coast but not at high altitudes. Flowers, which occur in September and October, remain open for only about 24 hours.

The Genus ***Sarcochilus***

Sarcochilus ceciliae usually grows in exposed areas on rocks that receive a lot of sun, wind, rain and whatever else is going by. The roots are frequently covered with moss and at times the plant itself is almost hidden by this moss. Flowering from October to January. October heralds in those magnificent sprays of *S. falcatus*. Although the best specimen plants are usually found in the cooler forests some distance from the coast they can be seen quite near salt water. It will grow on rock as well as trees and where shade has been removed, completely thrive under these conditions also. The Hastings region is the southernmost recorded point of distribution of *S. hartmannii* and whilst the quality of flowers does not match the northern forms the unusual spotted flowers found in a couple of localities are most attractive. A moderate to high altitude plant that flowers from September. Not to be outdone by its larger relatives is *S. hillii* that delicate little dweller of the undersides of branchlets of small trees overhanging or close by watercourses. Quite common and widespread. Flowers may be pink or white and occur from about November. Last but not least is *S. olivaceus* which is nearly always found in those moist gullies where it grows on trees or rocks. Flowers from September.

A plant that is very difficult to distinguish from *Papillilabium beckleri* is *Schistostylus purpuratus* which grows on the outer branches of small trees overhanging or close by running water at medium to high altitudes. Flowers in September.

Depending on altitude one can find *Spiranthes sinensis* in flower from December to May. They grow under a variety of conditions from black sand along the coast to sphagnum swamps on the tops of the range.

The Genus ***Thelymitra***

Finally we come to the *Thelymitra* genus and *T. ixioides*, a common enough sight particularly along the coast. Flowering commences in September. Growing in a similar situation is *T. ixioides* var. *truncata*, apparently not common but scattered along the coastal fringe. Also seen along the coast is *T. media*, never abundant but there for those who wish to search. Flowers in September. The pale blue flowers of *T. nuda* can be seen intermingled in *Dendrobium kingianum*, where its large tuber is buried in moss on the rocks. *T. pauciflora* is possibly the most common of the genus. Colonies range from the black sandy heathlands along the coast to the damp margins of sphagnum swamps on the top of the range. Flowers from November. Only one plant of *T. retecta* has been located and it was growing alongside *T. pauciflora* near the sphagnum swamp. A December flowering. Throughout the same swamp and a couple of others close by is *T. venosa*. In a good season large masses of these lovely flowers can be seen. Very heat sensitive, the flowers open only for a short period during the warmest part of the day. One pink flowering form has also been located. Another December flowering.

Thelymitra nuda

As the above recordings have been kept over a short period of time they are not complete and further observations may extend the list, the flowering times and the number of species located.

All the above comments are restricted to the Hastings Valley and not meant to indicate growth, range, habitat and flowering times in other areas.

2 April, 1981

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10TH WORLD ORCHID CONFERENCE REPORT ON THE ANOS DISPLAY

by Erhard Husted

To organise a display in another country thousands of miles away involves continual communication and lots of worry. Such was the case with the ANOS stand in Durban, South Africa.

With the sole aid of one dedicated man in South Africa and the encouragement from a few Australian growers, an Australian native orchid display was staged. This display I believe was the first ever of Australian native orchids growing and flowering; they were not cut flowers. Dormant terrestrial tubers had been sent two years ago as a pilot scheme with additional tubers to be sent subject to their success with the first lot. We believe that some of the second consignment even found their way to Scotland. The fate of the others is still a mystery. The Epiphytes were sent over about twelve months ago.

The display stand size was three metres square. Staging material such as boxes, sand, foliage plants and hessian was organised with the co-operation of the 10th World Orchid Conference Working Committee. A name plate for "Australasian Native Orchid Society" was burnt into a wooden plaque.

Armed with the names of the orchids that would be taken by road transport from Capetown to Durban (about 1,600 kilometres) arrangements were made for labels to be printed in Sydney. The labels were plain white gloss cardboard 4.5 cm by 7.5 cm in size, a map of Australia in orange was drawn with the names of the plants printed in black written across Australia. A larger map of Australia along with six large photographs of various Australian orchids was also taken. The idea was to have terrestrials set around Victoria, South Australia and Western Australia with the Epiphytes along Queensland and New South Wales.

On arrival in Durban, a quick change into working clothes was made and off to the large hall to set up the display. Jim Holmes, our ANOS member in South Africa, was there, along with the plants.

Due to inclement weather on the way up from Capetown, plants of *Dendrobium x gracillimum, D. x delicatum, D. gracilicaule*, and others had suffered heat stroke and had closed up. They were useless. This weather also affected other plants in Capetown and they had opened too soon (*Dendrobium speciosum, D. aemulum* and some of the terrestrials).

Jim was most upset but had not been idle; he had begged and borrowed from other sources Australian natives for our display and from the Durban Botanic Gardens, seven plants of *Phaius tancarvilliae.* Frank Slattery gave cut Australian Native Orchid flowers from the Australian Orchid Council display. Had a well known terrestrial grower from South Australia been there, I am sure he would have wanted his cut flowers put in our display rather than that of the O.C.S.A. display where they were unfortunately lost among the exotics.

Plants on show were *D. kingianum, D. speciosum, D. x delicatum,* D. Bardo Rose, *Diuris longifolia, Diuris maculata. Caladenia leptochila, Pterostylis baptistii, P. plumosa, P. biseta* and *P. concinna.*

While the ANOS Display was not large nor showy, it was there and it did create a bit of interest with some people asking if the plants were for sale after the show.

The next World Orchid Conference is in Miami, Florida in March, 1984. Perhaps with more interest from our readers we can again be there.

In conclusion I wish to thank the following people for their encouragement and assistance. First and foremost, Jim Holmes of Stellenbosch, South Africa. Without him the ANOS stand would have been a non-event. Ron Harvey for the labels, Joe Betts for encouragement, Garry Wells for the photographs. In South Africa, the Cape Orchid Society, Mrs J. Human, Mr Kottler, Mr Waltner and Geoff Nichols of the Durban Botanic Gardens for the loan of their plants. Thanks also to N.O.S.S.A. who conceived the idea two years ago and launched the "pilot scheme" with so many terrestrial tubers including those wanderers to Scotland.

3.11.81

81 Darvall Road,
West Ryde. 2114

Full credit must go to Erhard Husted himself for seeing this project through — regardless of apathy, discouragement and some personal expense. Several appeals were made in The Orchadian *during the two years prior to the Conference, especially for epiphytic orchids from growers in our eastern States. There was, literally, no response. Erhard sent all the epiphytes.* — *Editor*

THE AUSTRALIAN ORCHID FOUNDATION

From the minutes of the fifth Annual Meeting of the AOF on 18/10/81 the following selected items will interest ANOS members:

Research Committee: Mr Len Lawler has succeeded Dr P.S. Lavarack as Chairman of this Committee. Mr Alex George has resigned from the Committee and the C.S.I.R.O. has approved the appointment of Dr Stephen Hopper, a distinguished botanist, in his place.

The Species Seedbank: demand has exceeded supply. (Readers are asked to give some thought to this. All societies have been written to by the AOF). Len Lawler, having relinquished the post of Curator of the Seedbank, **Mr Graeme Banks of 183 Windsor Road, Northmead, 2152, N.S.W. has taken over as Curator. (Telephone: 639 4815). Seed or green pods of species only (both exotic and native species) should be wrapped in clean paper (not plastic) and sent to that address. Plan ahead to make selfings of species for "Practical Orchid Conservation".**

Translation of Schlechter's Die Orchidaceen von Deutsch Neu Guinea. The book, in English, should be on sale early in 1982 and will be publicised world-wide ("A special offer will be made in the near future").

Conservation (I quote from the minutes): "At the present time truckloads of native orchids are coming into Victoria from Northern N.S.W. . . . . to satisfy commercial interests and supermarkets . . . the natural habitat is being destroyed . . . It was decided that the Secretary draft a suitable letter to the N.S.W. Authorities". (The president of ANOS Council has recently written a letter to the General Manager of a very large supermarket chain about some unfortunately legal but extremely "dodgy" dealings in Sydney which involve the fact that a State's laws cannot be invoked beyond its boundaries. Thus native orchids (dead or dying on sale) are offered in N.S.W. as "ex Queensland" and vice versa. That truckloads of *D. falcorostrum* are going into Victoria regularly is sickening enough but one hopes that Victorian buyers do realise that these beautiful orchids — in their possession — represent indirectly the plundering of our Antarctic Beech forests in N.S.W. and Queensland . —Editor)

Taken from the July 1981 issue of The Orchidophile *(Sydney Group Bulletin) with permission of the author, this article begins a series to be written by Mike Harrison for* The Orchadian.

CULTIVATION BASED ON HABITAT OBSERVATION

I . . . *Sarcochilus fitzgeraldii*

by Mike Harrison

It is most generally acknowledged that *Sarcochilus fitzgeraldii* is the most beautiful member of the genus *Sarcochilus* in Australia, and I feel sure that anyone who has seen a mature clone of this plant in full bloom would agree. Unfortunately, large, well flowered plants are not often seen in cultivation, due largely to the fact that, compared to their close relative, *S. hartmannii*, they are considerably slower to establish into specimen plants. They are also usually not as free-flowering as *S. hartmannii.*

There is no doubt that, by far, the biggest and best plants of *S. fitzgeraldii* that I have ever seen are in the wild where, hopefully, they still remain. This species usually grows in colonies, and a large colony may consist of hundreds of plants, some of which can be as big as a table-top. Part of the thrill of finding *S. fitzgeraldii* in the bush is the beauty of the country in which it invariably occurs. It makes its home in the deep shaded gullies and ravines of northern New South Wales and southern Queensland, in rainforest or semi-rainforest areas along the coastal ranges. Although it has been recorded growing on the floor of the rainforest, it is most usually found growing along steep sided mountain streams which wind and tumble their way down towards the ocean. As well as growing on the almost vertical rock walls, plants also establish themselves on large boulders which have come to rest in the centres of streams. This is rugged country, and really only for the sure of foot. The slippery rocks are kept continually damp by the spray and the high humidity, and the Lawyer Vines and Stinging Trees can make the going very unpleasant, not to mention the legions of leeches. At times, access down into the ravines, can be difficult and there may be several hundred yards between breaks in the sheer walls. At these spots you can climb down to the water and it is often within a few feet of the water that *S. fitzgeraldii* grows.

For those who are growing *S. fitzgeraldii*, it may be of value to describe the conditions under which they grow in their natural habitat. The atmosphere is always cool and humid, with constant air movement due to the fast flowing water. Often the roots of the plants grow into and intermingle with the huge mats of ferns and other inhabitants of this rocky environment, and at times plants are also seen with their roots growing up on to the bases of trees near the waterside. Although they appear somewhat fragile and brittle, these roots are the key to the survival of the plant, for as well as seeking out and extracting nutrients from the rocks and pockets of humus trapped in the cracks and crevices, they must also hold the plant securely in position. This second function is particularly important for those plants growing close to water, for when these streams flood they become raging torrents, capable of shifting large tree trunks many miles downstream. In fact, the water level may rise four ot five feet overnight and not recede for several days, and although the plants are obviously damaged during these times, they do survive and recover quickly.

Another factor involved when considering growing conditions is the light intensity under which the plants grow. It is not as shady as one might imagine, for the break in the canopy caused by the ravine may be twenty or thirty feet wide, and although the trees on either side do tend to spread into this space, most plants appear to be exposed to at least moderate amounts of light. Some of these growing on rocks in the centres of the ravines actually receive several hours of direct sunlight each day, and these appear to be as healthy and happy as those which receive only broken or filtered light. The extra light may, in fact, assist these plants to flower a little better than their siblings in more shaded positions, but this is debatable, and I would not advise growing *S. fitzgeraldii* in full sun in cultivation.

Sadly, *S. fitzgeraldii*, like *S. hartmannii,* is becoming uncommon in the wild, and those who know its whereabouts usually guard their secret jealously. Most of the damage caused to populations of this species has been done by commercial collectors who usually remove every plant that they can find, but individual growers must also take part of the blame. On more than a few occasions I have heard growers saying that they had collected fifteen or twenty plants of a particular species "just in case I lose a few", and one grower collected by the chaff bag full so that he could give a couple of plants to everyone he knew, as well as to their respective dogs. This is not generosity, it is vandalism, and I have seen places where it has occurred.

Anyway, enough of the sermonising; let's get back to *S. fitzgeraldii*. To be honest, this is an orchid which doesn't grow all that well for me. I am able to keep it alive, and it does flower fairly regularly, although not profusely, but I am afraid that my plants pale in comparison with others I have seen. Last year at the ANOS Hastings Valley Group Spring Show, there were a couple of really beautifully grown and flowered clones benched by Alwyn Flanagan, one of their local orchid enthusiasts. I asked him about his growing techniques and he told me that he keeps his plants of this species at his parents' place, a dairy somewhere back up on the Comboyne Plateau. On average, he said, he only visits the place every couple of weeks, so it would seem that the natural cool, crisp environment of this highland area is, to a large extent, responsible for the condition of the plants. Incidentally, I should point out that Alwyn is a successful grower of natives, and this factor also plays an important role in the success of his *S. fitzgeraldii* specimens.

From my own experience and from what I have seen, I think *S. fitzgeraldii* probably grows best in terracotta pots, although this depends a lot on the environment being maintained in the orchid house. Terracotta pot culture necessitates more frequent watering because of the porous nature of terracotta, but I think this is a good characteristic as it allows some drying out of the medium in the centre of the pot. Plastic pots, of course, are not porous, and water can only escape through the drainage holes in the bottom or by evaporation from the top. This may in fact be an advantage in certain conditions, especially when water is scarce or drying winds are prevalent. It all depends on your growing conditions.

Like virtually all of the Sarcanthinae species, *S. fitzgeraldii* likes to have plenty of air movement around its roots, so a fairly coarse potting medium is indicated. The following mix would probably work fairly well:

1 part sandstone chunks (one inch)
1 part pine bark (one inch)
1 part charcoal (half inch)
½ part Cymbidium compost (to add a little body)

And don't forget feeding! Sarcanthinae species continue to grow throughout the year and although they do slow down in winter they still require some feeding even then. They have two main growing periods during the year, these being spring and autumn, and it is at these times that feeding is most beneficial. Observe your plants carefully, especially the root tips, and you can tell when the growth is speeding up or slowing down. During the periods of increased growth the root tips become elongated, with up to half an inch or more of green at the tip before the spongy, white velamen commences. During these peak growing periods feeding can be carried out every ten to fourteen days with excellent results. This should slowly taper off as the weather becomes cooler, until, during winter, once every three or four weeks would be ample. Any organic fertilizer **used at half strength** will do. I usually use Nitrosol.

By the same token, observation of the root tips can tell you when not to water. The same rule applies; when the root tips are elongated watering can be increased, but when the root tips slow down, watering should be reduced. During winter the root tips may slow down to just a point of green right at the very tip, and at these times watering should be reduced fairly drastically, or the roots, and hence the plant, may be damaged or even killed. These guidelines need to be applied carefully, as conditions vary greatly between different growing conditions and the manner in which people handle their plants. In the long run, the best cultural rules to follow are those formulated by your own observations and experiences. You must experiment with, and modify when necessary, your cultural techniques as you go.

If you can get hold of a plant of *S. fitzgeraldii* give it a go. Properly grown and flowered it is a most rewarding species and one that is certainly not seen on the showbench as often as its beauty warrants.

Lot 2, Howes Road,
via Wilberforce,
N.S.W. 2756.

Sarcochilus fitzgeraldii
Drawing: J.J. Betts (detail from cover design)

A Further Look at *Pterostylis barbata* Lindley and *Pterostylis plumosa* Cady — and Six Other Possible "Bird Orchids" in Western Australia

by Ron L. Heberle

Peter Vaughan's article in *The Orchadian* of December 1979 and Andrew Brown's follow-up in the June 1980 issue highlight some stimulating and interesting information on this highly specialised group. Both writers seem to agree that the two discussed are the sole representatives, although Andrew suggests there could be a hybrid in Western Australia. Both quote Alex George and Leo Cady to support this viewpoint, although Alex George has some reservations and suggests that some further research is necessary. How very true.

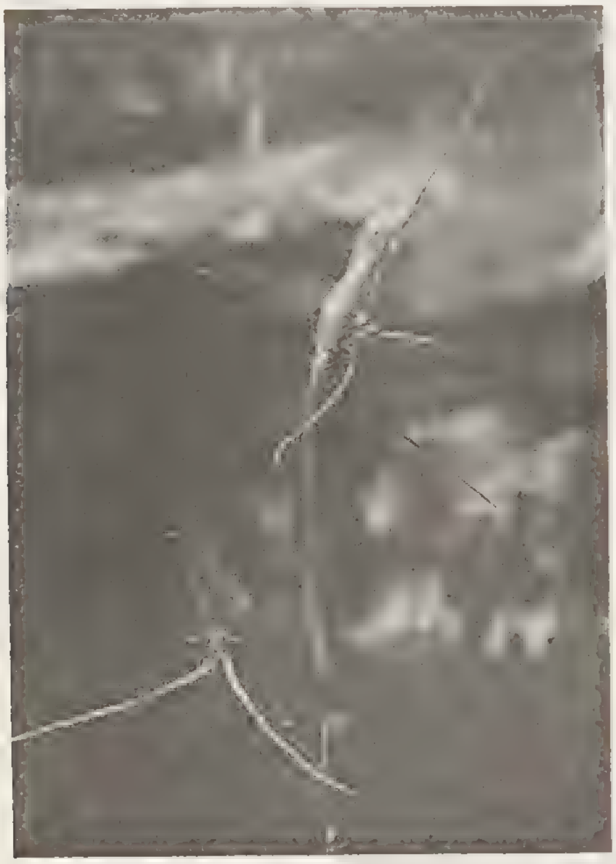

Figure 1: *Pterostylis turfosa* or *P. barbata?* (flowers August-September).

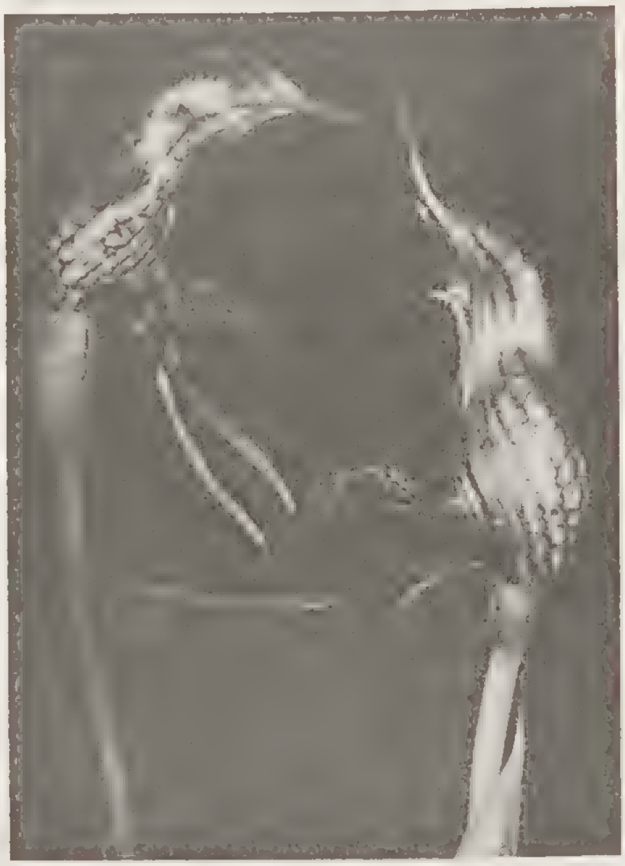

Figure 2: *Pterostylis barbata* -ex Marambene (flowers August-September).

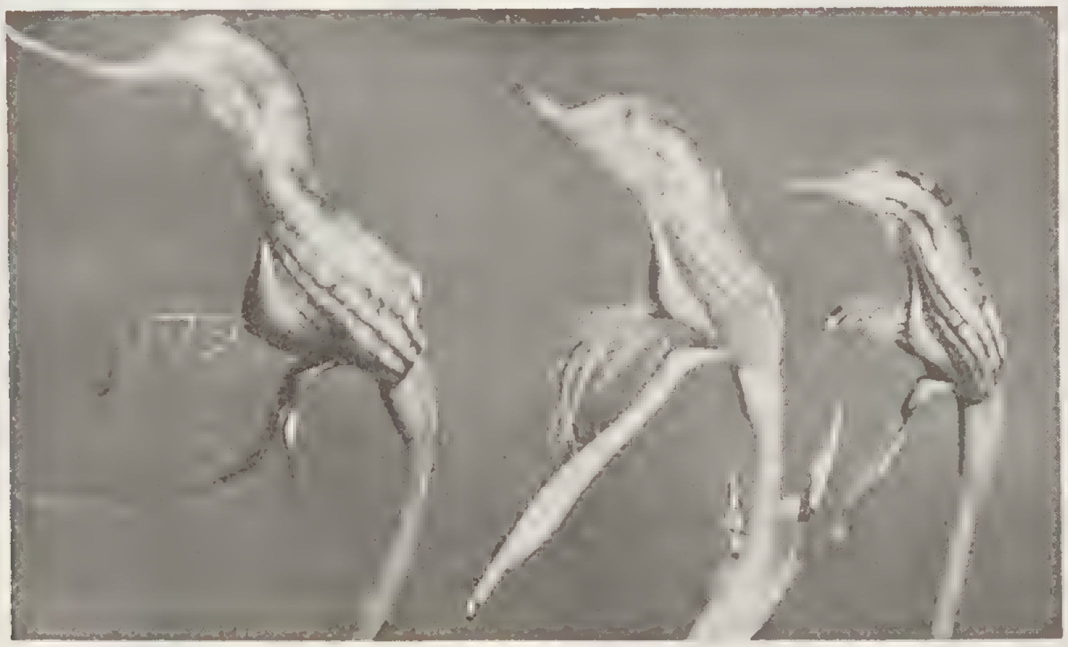

Figure 3: Three *Pterostylis* spp. (?)
From left: (1) ex Rocky Gully (Sept-Oct), (2) ex Young's Siding (Sept-Oct) — possibly *P. plumosa?*
(3) ex Esperance (Aug-Sept).

In the *W.A. Naturalist*, 1961, A.S. George discussed *P. turfosa* and *P. barbata* and suggested that the only difference between the two is the length of the filiform points and reduced *P. turfosa* to a synonym of *P. barbata* as Lindley's name predates Endlicher's and suggests that both the W.A. and the Eastern States species are one and the same, unless further studies reveal substantial differences.

In 1969 Leo Cady named *P. plumosa* so we then had two distinct and different species. In 1971, in *Nuytsia* Vol. I, No. 2 A.S. George suggests that specimens from Young's Siding, W.A. are similar to Cady's *plumosa*, so we are left with *P. barbata* and possibly *plumosa* in W.A. and *plumosa* in the East.

During 1977 Herb Foote, Foundation President of the W.A. Native Orchid Study and Conservation Group (then the W.A. Native Orchid Society), visited us at Albany and pointed out that the Albany "Bird Orchids" were markedly different from the *P. barbata* that grows in abundance near his home at the foot of the Darling Ranges near Perth. In 1979 I took specimens collected near our home in Spencer Park, Albany to the W.A. Herbarium where A.S. George confirmed their first recording.

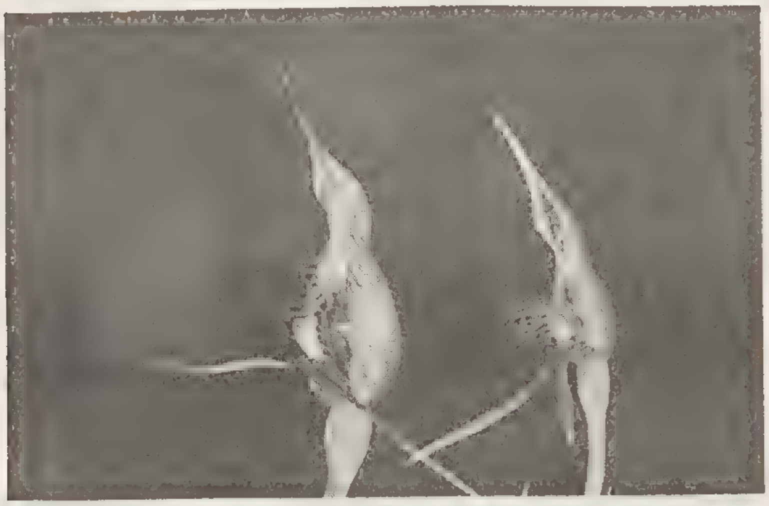

Figure 4: Two *Pterostylis* spp from Manjimup (flowering November-December).

Andrew Brown stated in his article in *The Orchadian* that *P. barbata* grew at Albany. I have never seen it within 150 kms of here; nor have I ever recognized a hybrid and have never collected at Busselton.

In August 1840, Ludwig Preiss collected a *Pterostylis* in Stirling Terrace, Albany, right in the town. It was subsequently named *P. turfosa* by Endlicher in 1946. This is the orchid that flowers all around Albany and up to 60 km east and west and 50 km inland in August and September. It would seem that there is a strong possibility that the Albany "bird" is in fact *P. turfosa*; so we could have at least three in the west.

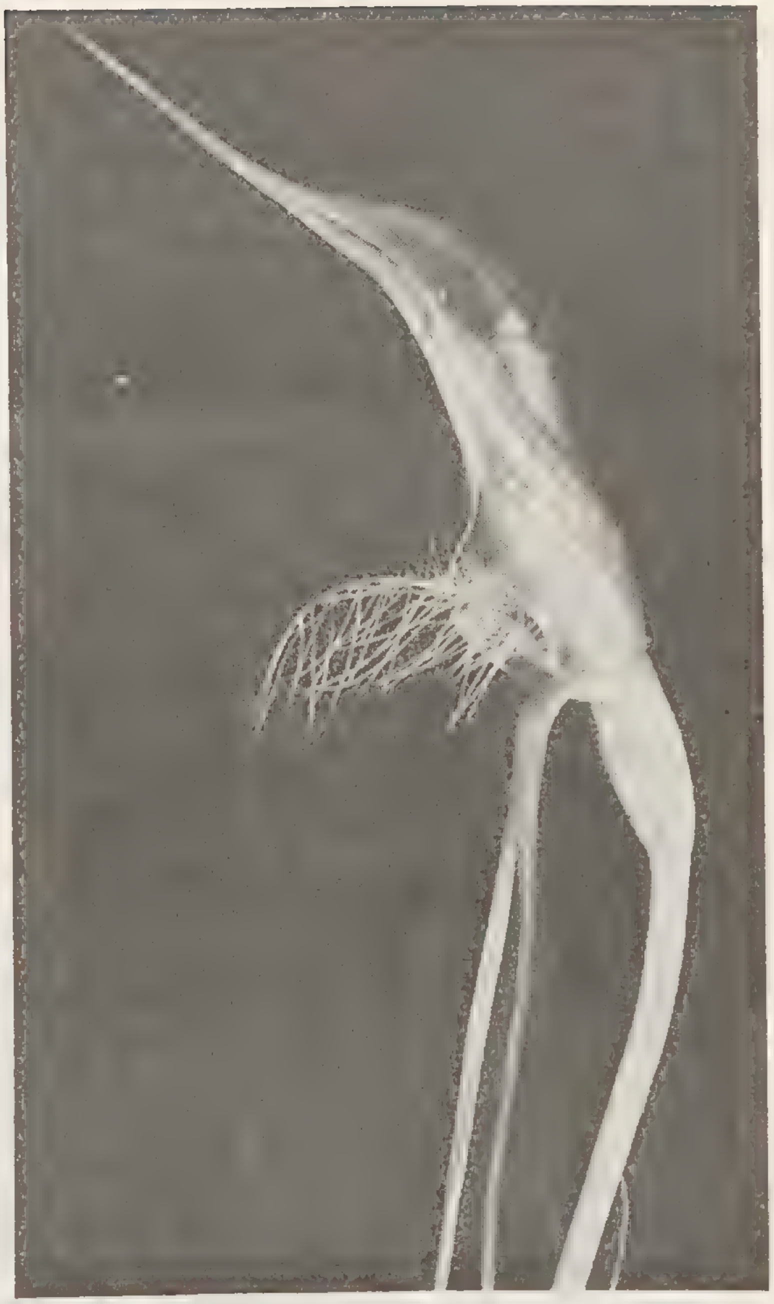

Figure 5: *Pterostylis* sp. — Tor Bay (flowers October—November).

As I have stated in the title: "and six other possible 'bird orchids' " I still have to account for the remaining five. I admit having great difficulties in discussing unnamed and undescribed orchids. I therefore submit photographs that will speak for themselves. Western Australia is a very big State; we still have approximately 15,000,000 hectares of bush in the South West; no more than 1% has been looked at by eyes that can identify what they see.

To conclude: in offering the results of 20 years or more of field experience, no single person can speak with authority. There will be many "birds" still to be found.

78 Campbell Road,
ALBANY, 6330, W.A.

All photographs by R.L. Heberle.

Letters to the Editor

Dear Editor,

It is a pleasure to note that the standard of material in *The Orchadian* is being maintained. I refer in part, to the article "Of Fertilisers and Native Orchids — The Essential Elements" by Noel Grundon in Vol. 7 No. 1 (Sept. 81).

I also shudder at some of the statements on nutrition made from time to time in Journals or Newsletters and appreciate that *The Orchadian* has not fallen into these depths.

However, I would like to draw your attention to an apparent misprint in the L.H. column of page 3 under the heading Nitrogen line 11. The word "sufficient" should read "insufficient". This sentence serves to re-inforce the importance of nitrogen to the growing plant. Ordinarily carbohydrates and oils are broken down to release energy and these are expendable materials. However, these cannot release nitrogen for the growing tissue so the old parts of the plant are killed or at least debilitated by applying nitrogen to feed the young tissues.

I have for some years considered that monocots tend to thrive very well on the ammonium ion rather than the nitrate ion — not for any really substantial reason, I fear. Perhaps Dr Grundon may care to comment on this point. The ammonium ion when translocated into the root is readily available for incorporation into amino acids. This places quite a demand on carbon skeletons, perhaps the demand outstripping the photosynthetic capability. Perhaps those monocots with C_4 metabolism may be able to cope adequately as their photosynthetic rate is high; or perhaps conversely, because ample carbon skeletons are available the ammonium ion can be used readily.

If the ammonium ion is preferentially translocated from ammonium nitrate fertiliser it could result in a toxic build-up of the nitrate anion unless this is flushed away due to lack of suitable exchange capacity. This seems to be an area of orchid nutrition which could well have more light thrown on it!

On another subject I support your contention that *The Orchadian* is not a bulletin or a newsletter nor should it ever be allowed to become such a publication. Again, I note with interest an article relevant to the orchid flora of Hong Kong. I believe that something from the "outposts of the Empire" has no deleterious effect on the declared dedication of *The Orchadian.*

Yours sincerely,
G.C. Morrison,
34 Leuna Avenue,
Wahroonga, 2076

6 October, 1981

Dear Sir,

Horticulture versus Botany

I have only been a member of A.N.O.S. for a short period and received only one (September) journal.

With reference to your Editorial, Feed-back and Follow-up section, you made mention of a need for a balance on horticulture and botany. As I have only been able to digest Dr Noel Grundon's article on fertilizers, and Ted Gregory's article on *Dendrobium tetragonum*, I feel that this journal is quite heavy reading for the bulk of subscribers. The balance between horticulture and botany (in this September issue anyway) is grossly unbalanced. Whilst I can appreciate what Professor R.E. Holttum said as regards Orchid Journals and what they should consist of, I believe that we should stick to what *The Orchadian* stands for "Dedicated to the study and care of Australasian indigenous orchids", and present as even as possible a journal consisting of both the above criteria.

As this journal is no doubt being read by a considerable number of people familiar with botany and science associated with orchids, the majority of households it goes into are ordinary growers and breeders and if more emphasis is placed in the care of our orchids to bring it in line with the botany, this would be greatly appreciated and present a valuable publication for the majority of people.

Wishing you good-will with the job you are doing,

20.10.81

Yours sincerely,
Stewart G. Penman,
RMB 196
Woodenbong Road,
Kyogle, 2474

Editor's Comment: To both Mr Morrison and Mr Penman I can honestly say: "I know how you feel!" It would be easy to say that one can't please all of the people all of the time: but I can try. ANOS Council plans to conduct a questionnaire-survey of readers' opinions in the near future. This should indicate to us the ratio of "Morrisons" to "Penmans". In the meantime I am getting a satisfying number of comments like those of Mr Morrison as well as letters like Mr Penman's — so whatever the majority turns out to be it seems I should follow the policy I adopted when I began as editor: a proper balance between horticulture and botany. The actual balance depends on Contributors — a fact that nobody seems to mention. For co-operative effort in writing give me the botanists every time — especially the amateurs. Perhaps the survey should include the question: When did you last write something on the care of orchids?

I welcome Mr Penman and the many other new subscribers and I wish them a long and satisfying membership. I do hope the December issue is a satisfactory overture to beginners, for we are all beginners of one kind or another.
— Editor.

Letters to the Editor (continued)

Dear Sir,

A Booklet for Beginners

In regards to the June editorial on what readers may like to see in Volume 7 of *The Orchadian*.

I was fortunate enough to visit the A.N.O.S. show at Mona Vale this year and, while there, picked up an informative little booklet, issued by the Victorian Group of A.N.O.S. Perhaps the journal may come up with something just as good in *The Orchadian* along similar lines, for I found the details delightfully short, yet helpful and easy to read.

Yours faithfully,

P.J. Simpson,
17 Arnold Street,
Mayfield, 2304

Editor's Note: Mr Simpson's remarks are true. Having read the booklet in August I arranged for copies to go on sale at the Mona Vale Show and then prepared the Book Review at page 40 of this issue. —Editor.

Dear Sir,

Orchid "Sports"

On a recent visit (18.9.81) to Eric Webeck's orchid collection, I was informed by Eric that he had grown more than 100 plants from aerial growths on his champion *Dendrobium x delicatum* plant (ANOS Spring Show, 1980). He showed me one of these plants that obviously carried different flowers from those of the others. The flowers were smaller with lighter pink colouration and with different markings on the labellum. Furthermore "aerials" taken from this clone also carried these same characteristics. Eric considers this as a 'sport' from the champion plant.

As I have not previously seen or heard mention of 'sports' in regard to orchids, I should appreciate it if readers would forward any observations or information they may have on orchid 'sports' to the Editor or to me.

Yours faithfully,
P. Collin,
5 October, 1981 33 Darnley Street,
Gordon. 2072.

Dear Sir,

"Feed Back and Follow-up" — from the West

Your item under the above heading in the December 1980 issue of *The Orchadian* (p. 222) re man-made terrestrial hybrids and a reader's concern that these might take over in the "wild" and wipe out the "naturals" requires comment.

I hope to have an article published in *The Orchadian* that will throw some light on the fascinating story of natural hybridisation of Caladenia in W.A. From my research on the subject, it seems that this phenomenon is likely to have been the major factor in the evolutionary chain and a contributor to the hard-to-accept, amazing specialisation that is so self-evident.

In regard to the problems of identification, you eastern States enthusiasts should count your blessings. At least your orchids have names! In Western Australia we have to manage with "complexes" that grow each year as more and more orchids are found.

Yours Sincerely
27 October, 1981 Ron L. Heberle.
Albany, W.A.

(Mr Heberle's article will appear in the next issue of The Orchadian*).*

ANOS Central Coast Group and the Rumbalara Reserve

In October 1979 permission was given to the members of the Central Coast Group of ANOS to collect orchids at the Mangrove Creek Dam site and to re-locate them in the Rumbalara Reserve at Gosford.

Dendrobium speciosum, D. linguiforme and *Liparis reflexa* were collected and members enjoyed the social side by getting to know each other (especially when you use a human ladder to reach a plant). Three ladies proved their worth when a black snake persisted in joining their group. One member showed how he could abseil without a rope when confronted by a black snake; and another member showed his ability to tap-dance on a log before falling gracefully into the creek.

Members could also see the work being carried out at the dam site. At the March 1980 meeting Mr Colin Watters, Supervisor of Parks and Reserves, Gosford City Council, explained the plans for the Rumbalara Reserve, which was a combined effort by the "Kitchens of Sara Lee" and Gosford City Council.

Gosford Rotary Club and other organisations such as our own group were becoming involved also.

Members had another collection day in March. Mr Alan Rushton was elected as a delegate to attend the meetings to plan the development of Rumbalara Reserve in May 1980. A planting day was also carried out in May 1980. Members armed with extension ladders, a portable generator, lots of muscle and plenty of talk, placed the orchids

(Continues next page)

on the most inaccessible places on the "Grass Tree Hill" walking trail and hopefully the public will be able to enjoy them but not souvenir them.

The Rumbalara Reserve was officially opened in June 1980 and we felt proud to have contributed to beautifying the area as it was already proving a most popular picnic area with bush walks and beautiful views.

Another planting day was held in July 1980 and previously planted orchids appeared to be growing well.

In March 1981 members met at the Rumbalara Reserve to enjoy the past efforts of our group and it is pleasing to know that these orchids will not be drowned as the dam fills, but will continue to give pleasure to many people in the future.

13 November, 1981

Pat Burns (Mrs)
ANOS
Central Coast Group

The Henry Somerset Orchid Conservation Area

— A Note from Gerald McCraith

In 1979 Mr Peter Tonelly of Tasmania advised the AOF president that he had learned that a subsidiary Company of A.P.P.M. Ltd. had acquired land between Latrobe and Railton which was intended for re-afforestation and that it would be converted to a Blue Gum Plantation.

The late 'Jack' M.J. Firth referred to this area extensively in his book "Native Orchids of Tasmania" (1965).

The area is very rich in terrestrial orchids, 43 species being recorded, one of which is *Caladenia echidnachila*, very possibly the best stand that exists. In 1930, Dr R.S. Rogers described *Caladenia longii* from this area. Unfortunately this rare plant has not been found since, but it is hoped that the species still exists there.

Peter Tonelly has been the prime mover and has initiated negotiations that have involved Government Departments and other Authorities including the National Parks and Wildlife Service of Tasmania. The area to be set aside will be known as the "Henry Somerset Orchid Conservation Area" and will be one of thirty-five conservation areas managed by the N.P.W.S. of Tasmania but the **only reserve set aside specifically for Orchids.**

Throughout the various forms of negotiations with experts, harmony and co-operation has been fundamental in arriving at this decision. The reserve is a 40 hectare strip of land 1.5 km along the Devonport-Latrobe-Railton Road, and averages 300 metres in width.

Members of the Devonport Orchid Society have given a great deal of physical support and, from the beginning, the AOF has supported Peter's efforts and was involved in preparation for the official opening of the Reserve on 27 November, 1981.

AUSTRALIAN ORCHID COUNCIL

ANOS, as an "associate member" of the AOC, has received the minutes of the Annual Meeting of the Council, held on 23rd September, 1981. Of specialised interest to native orchid growers is the following extract from a "Report of the Nomenclature Committee".

"The Council should direct that all State authorities and their affiliated societies should, when considering Australian Native Orchids and their hybrids for show purposes: (a) accept as Australian Native Orchids (inter alia): *Calanthe triplicata, Dendrobium antennatum, Phaius tancarvilliae* and *Spiranthes sinensis;* **(b) Refuse to accept as Australian Native Orchids (inter alia):** ***Dendrobium johnsoniae, Vanda tricolor*** **and** ***Corybas macranthus.*** **The Committee recommends . . . that this decision take effect on and from 1st January, 1982".**

As far as your Editor is aware ANOS was not consulted on these matters and was not represented — even by an "Observer" — at the AOC meeting. I am sure some of our members will regard these decisions as important and will want to know what the "inter alia" implies in both decisions. Perhaps any ANOS members who were present as representatives or delegates of other Societies will enlighten our readers in a future issue of *The Orchadian*? A few years ago your Editor was made painfully aware by the Committee of the North Shore O.S. in Sydney, that the Society not only accepted *D. johnsoniae* as an Australian native orchid but also felt that it was "bad taste" for anyone to point out that it was not. It is hoped that the AOC's decision will not offend the sensibilities of the present Committee of that Society. (Reliable references to the status of *D. johnsoniae* may be found in *The Orchadian* Vol. 6, pp.34, 109, 148, 223 and 279.)

BOOK REVIEWS

"Native Orchids in Melbourne — An Introduction to Cultivation" by the ANOS Victorian Group. (Revised edition, 1981) Booklet of 55 pages. Illustrated, b & w line drawings. Price $2.00 from ANOS Victorian Group Secretary (Mr Clive Lloyd) 17 Leonard Close, South Clayton, Vic. 3169.

This attractively produced booklet is just what every beginner needs to get started (Old hands could learn a bit too. There is no nonsense, no waste of words and a high degree of accuracy. *Phaius tankervilliae* is now *P. tancarvilliae, Corybas* is the "Helmet" not "Helmut" orchid, & *hartmannii* has two 'n's; but in 55 pages that's about all one could carp at. The rest is first class).

Not only is the work written well, in good simple English; but also it is attractively presented. The drawings "by individual members", are a credit to the unnamed artists and worthy of acknowledgement. They are used as decorations (sometimes whimsical) rather than botanical illustrations and this adds to the charm and professional-looking design of the publication.

The sections include "Epiphytic Australian Orchids" —methods of cultivation, when to pot, slab culture, watering, housing, fertilizing etc. This is followed by "Detailed Cultivation Notes" on a selection of some 42 species. Each species is treated in a uniform, ready-reference format: Name, common name, "potted" or "mounted", temperature needs and flowering data (colour, size and number of flowers, and time of year). Below these data, brief notes appear on distribution, habitat, recommended medium for cultivation, appropriate housing and shading. This is a really concise "How-to-grow" for all of us. It is definitely not limited to Melbourne growers — as the title might suggest.

Terrestrial orchids get similar treatment but are grouped under a few genera.

To all those who clamour for "more cultivation information" in *The Orchadian*, I commend this little book whole-heartedly. Armed with this and a regular

Book Reviews (continued)

subscription to the NOSSA Journal (for excellent articles on terrestrials every month — without any social gossip) you should have all you need on growing techniques. To join NOSSA you have only to write to the Secretary (Mr E.R. Hargreaves), 1 Halmon Avenue, Everard Park, S.A. 5035 —Editor

"A Field Guide to New Zealand Native Orchids" by Dorothy Cooper (1981). Price Milburn and Company Limited., P.O. Box 2919 Wellington, New Zealand for the Wellington Orchid Society Inc. 103 pp., 16 colour plates, 40 figures. Paperback 21cm x 15cm. Price $NZ11.00 includes postage.

When I mention New Zealand orchids at gatherings of Australian orchid growers, the most common reaction is one of surprise: "I didn't think New Zealand had any orchids". This ignorance (even prevalent among members of the Australasian NOS) is a great pity since New Zealand's orchid flora is both rich (over 70 species in 20 genera) and fascinatingly different from that of Australia.

Unlike Australia, much of New Zealand is clothed in dense temperate and subtropical rainforest and so epiphytic orchids are found much more commonly there than here. Particularly common are three delightful species: *Earina autumnalis, E. mucronata* and *Dendrobium cunninghamii*. The earinas form huge clumps, bearing masses of sweetly scented, white or yellow flowers. The dendrobium looks more like a pendulous, epiphytic bamboo plant than an orchid and although not as floriferous as the earinas, is equally beautiful with its elegant branching habit and its well formed white flowers marked with carmine and apple green. All of these species are deserving of a place in anyone's orchid collection but sadly, their cultivation seems to be ignored by even New Zealand orchid growers.

Just as interesting as the epiphytes if not as spectacular are the New Zealand terrestrial orchids. Most of the genera and some of the species are shared with Australia though some of the New Zealand representatives of these taxa are startlingly different from those that Australians are used to. For example: a whole group of "spider orchids" (*Corybas* species) are found there which are quite unlike our "helmet orchids" in appearance. Most Australian orchid growers are oblivious to all of this.

Perhaps the reason for our ignorance is that there has never been a general reference book available on New Zealand orchids. Anyone interested in the subject has had to ferret out fragments of information from past floras and general botanical works and from journal articles. Dorothy Cooper's new book should change all that.

Cooper's work will be familiar to readers of *The Orchadian* as her continuing series of nine articles on New Zealand orchids appeared in our last volume. Like her other publications, the text of this book is written with meticulous care and her drawings are beautifully executed.

The book is printed on good quality matt paper and is securely bound. It is reasonably compact as you would expect for a field guide. Presumably the book is meant to be used in conjunction with Moore and Edgar's "Flora of New Zealand" Vol. II as no key is provided.

The introduction is brief and chatty but informative, explaining how the book came into being and outlining a few generalities about orchids. Most of the book is filled with genus-by-genus descriptions and line drawings of the orchids. Those species that Dorothy Cooper has encountered in the field are illustrated and described in some detail while the others are mentioned briefly. The descriptions are easy to read, written in semi-technical language yet informative. The drawings are accurate, complementing the text well and showing whole plants as well as relevant details of dissected floral structures. Useful habitat and distribution information is also provided. At the back of the book is a chart showing the flowering times of the different species presented so as to allow rapid between-species comparisons. There is a brief but adequate glossary of technical terms (most of which would be familiar to serious orchid growers anyway). Sixteen colour plates of a representative sample of New Zealand orchids are included. Some of these photographs are very good while others appear to be somewhat underexposed but all are excellently reproduced.

The author does not say very much about taxonomic problems and generally refrains from comparing New Zealand and Australian forms of widespread species. In my opinion this is wise considering the confusion surrounding terrestrial orchid taxonomy in Australia and the apparent lack of knowledge of many New Zealand species. Such comparisons must await full scale taxonomic revisions of the problem taxa.

Bearing in mind that this is a field guide, I am perhaps unreasonable in being a little disappointed in finding no information on the cultivation of N.Z. orchids. A few words on this subject would not have increased the size of the book greatly but certainly would have increased the potential readership. I suspect, however, that she would rather discourage people from collecting and cultivating them anyway: "Many species are difficult or impossible to transplant, others last only a few years in cultivation, and when we consider the growing interest in orchid societies and in our native orchids, we can imagine the destruction that could be caused by the unlimited collection of plants by even a small percentage of our growers." (Introduction, p.2). Dorothy Cooper advocates cultivation from seed and I share her enthusiasm for such a possibility.

The usefulness of this book is not restricted to its stated purpose as it is an excellent (and the only) general reference book on New Zealand orchids. It should therefore be compulsory reading for anyone interested in Australasian native orchids. Australians visiting New Zealand should have it with them. Hopefully this publication will stimulate further study of the biology and cultivation of these plants so a future edition may include detailed information on all of the native orchid species of New Zealand.

Peter Weston,
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University of Sydney, 2006.

The Australian Orchid Review, September 1981, carries a number of remarkable items of interest; but *please note*: the item on "Ira Butler Awards" is misleading (pp 184-6). Hybrids having New Guinea parentage are **not** eligible. Nor can **any Society "throughout Australia"** nominate entries, as stated.

So much space is devoted to Mr K. McFarlane that my close attention was drawn to his article "The 'King' Reigns Supreme" ("my love affair with the 'King' " — i.e. *D. speciosum*). He tells of his many crossings of this species on to "hardcane yellows with coloured lips" to achieve his "breakthrough", D. Australian Beauty (*D. speciosum x D.* Meadie) the latest thing in dendrobium breeding". Checking the hardcane species in D. Meadie's ancestry I found they were almost all New Guinea ceratobiums but, tucked away in the family tree was *D. bigibbum* subspecies *laratensis* — that lovely purple! Why is this remarkable? Because McFarlane had written in this same article "We must . . . avoid **stupidly** crossing on to anything carrying purple genes such as the Cooktown *D. bigibbum* types". (!)

— J.J. Betts

Vanda hindsii Lindl.

by V.A. Chadim

The question of conspecificity of the Australian *Vanda whiteana* Herbert & S.T. Blake with the New Guinea *Vanda hindsii* Lindl. was raised by Dr P.S. Lavarack at the recent Orchid Symposium in Sydney. I have seen the Australian species only in Dr Lavarack's photograph, but I collected a plant of *Vanda hindsii* Lindl. in New Guinea, near Umi river, 20km N.N.W. of Kaiapit, which is located 6° 16′ S, 146° 15′ E at 330 m above sea level. I took the plant to Goroka, where it grew on a tree-fern trunk and flowered surprisingly well in the cool conditions of an altitude of 1600 m.

Later I sent the plant to Kew, marked CH-178. My photographs may help someone to pass preliminary judgement. Sepals and petals are bronze coloured with a gold margin, labellum gold, flushed bronze. Column white, faintly flushed purple at base, column foot bronze, anther yellow.

Vanda truncata J.J. Sm. is widely regarded as a synonym of *V. hindsii* Lindl. and *Vanda tricolor* Lindl. a very close relative if not a synonym.

References:

F.A.W. Miquel: Flora Indiae Batavae, Vol. 3, p. 679 (*hindsii, tricolor*).

J. Lindley: Edwards's Botanical Register, Vol 33 (20 new series), sub plate 59 (1847) (*tricolor*).

H.G. Reichenbach (Reichb.f.): Walpers. Annales Botanices Systematicae, Vol. 6, p. 865 (*hindsii*), p. 866 (*tricolor*) (1861).

O. Ames: Orchidaceae, Vol. 2, p. 245-246 (*tricolor*) (1908).

J.J. Smith: Nova Guinea, Vol. 8, p. 121 & Tab. 41 (*truncata*).

J.J. Smith: Flora Von Buitenzorg, Vol. 6: Die Orchideen von Java, p. 590-592 (*tricolor*).

R. Schlechter: Die Orchidaceen von Deutsch-Neu-Guinea, p. 970-971 (*hindsii*, synonym *truncata*).

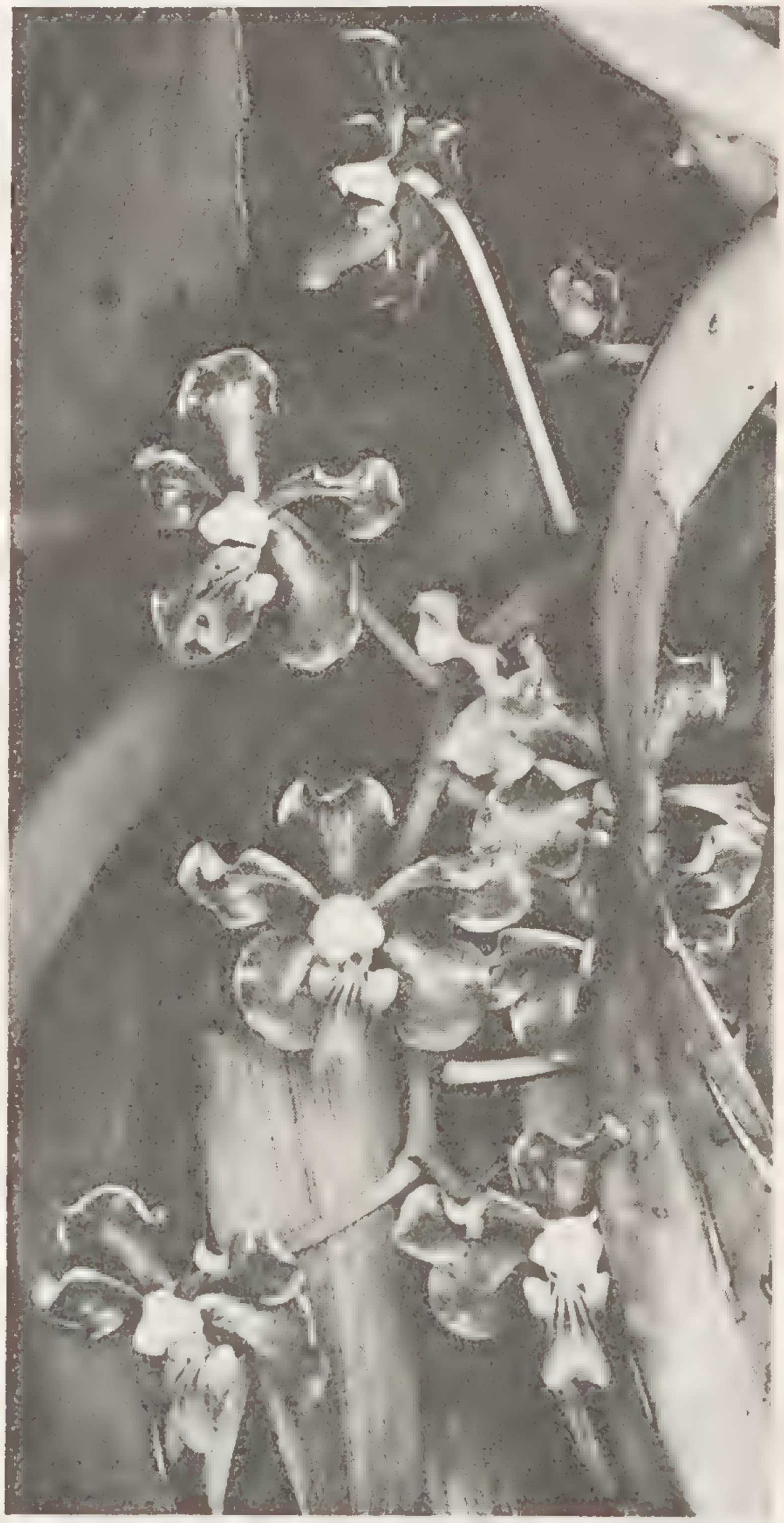
R.E. Holttum: Flora of Malaya, Vol. I, Orchids of Malaya, p. 726-727, p. 718, fig. 229 (*tricolor*).

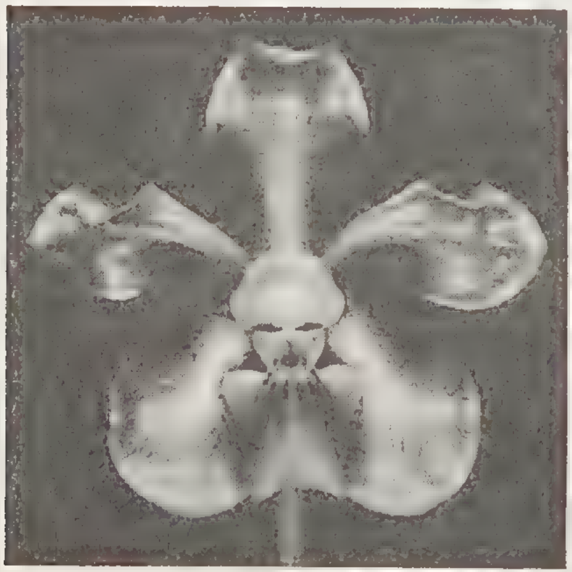
J.S. Womersley & A.N. Millar: A.O.R. Vol. 30, No. 3, p. 131-132, fig. on front cover (*hindsii*, synonym *truncata*).

P.S. Lavarack in Proceedings of the Orchid Symposium Sydney 1981, p. 15, p. 24, p. 26 (*whiteana*).

5 September, 1981

8 Parker Street,
Curtin, A.C.T. 2605.





Above: *Vanda hindsii* Lindl. – inflorescence

Left: *Vanda hindsii* Lindl. – flower

Photographs by V.A. Chadim

COMMENTARIES ON THE 1981 MONA VALE SPRING SHOW – SYDNEY AND WARRINGAH GROUPS

One of the joys of visiting the annual Mona Vale Spring Show is, quite simply, that it gets better each year. This year was no exception, with more than 250 individual entries and four staged displays, one of which, to the delight of the organisers, was presented by ANOS Wollongong Group.

Apart from the Show itself, this year marked a transition for ANOS. For the first time in the history of the Show we were not reliant upon the Orchid Society of New South Wales to provide the championship medallions, and, instead, the newly commissioned ANOS Medallions were presented, two silver and two bronze. The design, by Wal Upton, depicting Australasian Orchids, proved to be very popular, and the long term benefits to ANOS in prestige and national recognition will surely be great.

From the moment the doors opened on the Saturday morning, the hall was full at most times, as visitors admired the spectacle of a whole show devoted to Australian Native Orchids. Indeed, the sweet aroma produced by the masses of blooms could be detected from quite a distance, and I spoke to one couple who said that they had just followed their noses. In all about 1000 people passed through the doors during the two days of the Show.

A "terrestrial" wins the W.H. Murdoch Prize

This year it seemed to be David McAlpine's display of *Diuris* species which sparked most comment and interest. David's ability to grow these, and other, terrestrials is remarkable and his display was a joy to all those who viewed it. He was awarded the ANOS Bronze Medal (W.H. Murdoch Prize) for Champion Specimen Native Species Orchid for a pot of *Diuris punctata var. punctata* consisting of eight multiple flowering spikes of large mauve flowers; it was truly beautiful. David was also awarded Firsts (for Best *Pterostylis*) for *P. boormannii* and (Best Other Terrestrial) for *Diuris aurea.*

The two ANOS Silver Medals were awarded to Ian Brewster for his beautiful *Dendrobium striolatum* as Champion Native Species, and to Chris Arnott for a lovely, glistening white *D. X delicatum*, which as Champion Native Hybrid Orchid, automatically goes in the running for the Ira Butler Award. The final Championship Prize, the ANOS Bronze Medal for Champion Specimen Native Hybrid Orchid, was again awarded to Eric Webeck's huge pot of *D. X delicatum*, making it two years in succession that Eric has taken out this prize with this orchid.

Other Hybrids

A hybrid which really caught my eye this year was *D. Eureka*, benched by Ian Carter. A large, well flowered plant, old gold in colour and with the characteristic *D. fleckeri* labellum. I am amazed that we haven't seen more of this cross. I am sure that it will make its presence felt in the future, for I was as much taken with it as I was when I saw my first good D. Hilda Poxon some years ago. Joe Betts's prize-winning trio in the Best Group of Three Hybrids was also impressive. He exhibited *Dendrobiums* Rosemary Jupp, Star Delight and Gillian Leaney (large "Silcockii" type), each of which would have been probable prize winners had they been benched individually in their respective sections.

The Species

As for the species, I think the *D. kingianum* were as good as I have seen. The exclusive display of this species presented by Chris Arnott was excellent and earned him a special commendation from the judges. There were also a couple of very good *D. tetragonum* benched by Ian Brewster, as well as a lovely *D. speciosum* with flowers nearly 10cm long benched by Irwin Palmer.

Last, but not least, I must mention the display by Jill and Wal Upton, which was awarded First Prize in the display section. Individual orchids in the display also earned two First Prizes and three Second Prizes. An orchid in this display, a small D. Hastings, quite impressed me. It exhibited large, well textured flowers with a good rounded shape, certainly an improvement on the original D. Hastings of ten years ago. It led me to speculate on the possible outcome of remakes of some of the less popular hybrids of the past. If they were done again, using only the best parents, then perhaps they would not be as disappointing, and we could introduce a little more variation to both the show bench and the hybrid gene pool.

Anyway, with the obvious high quality of both orchids and cultural techniques displayed at the 1981 Mona Vale Spring Show, the future of our natives looks bright. Congratulations must go to the organisers, Warringah and Sydney Groups of ANOS.

Mike Harrison

THE BEST SEEDLING SPECIES EXHIBITED

One of the plants that attracted more than the usual amount of attention at the 1981 ANOS Spring Show was Eric Webeck's *Dendrobium kingianum* seedling (Awarded First place in the class "Best species seedling — First Flowering"). This plant had eight upright racemes and up to seven flowers to the raceme. The flowers were of large size, open, and of a bright purple colour.

Eric is well known (in the Sydney region) as a very successful grower of specimen native orchid plants, specialising in *Dendrobium kingianum, Cymbidium canaliculatum* and the hybrid *Dendrobium X delicatum.*

He has won many prizes and awards (ANOS and OSNSW) with these plants. Eric is also one of the growing number of orchid enthusiasts interested in producing improved clones of our native species. The *Dendrobium kingianum* seedling exhibited is one of the significant results of his line breeding work.

On a visit to Eric's orchid collection in September (one week after the ANOS show) I saw over 1,000 *D. kingianum* seedling plants and learned that these were the progeny of three crosses he had made using three reddish purple coloured clones of *D. kingianum.* One of the three parent plants was *D. kingianum* 'Bungan Castle' AM/OS NSW and AOC 1979 — to my knowledge the first Australian native orchid to achieve the AM in Australia. He has also propagated "selfings" of the 'Bungan Castle' clone. Approximately 20% of all the seedlings were flowering and all were of a reddish purple colour. There were no whites or light coloured flowers produced. Using the RHS Colour Code, I found that the colour of the flowers varied over a relatively small range, coded as Red Purple 74B. The flower size varied from average to large. Eric mentioned that the largest flower measured 35mm from petal tip to petal tip and 28mm from the top of the dorsal sepal to the tip of the lateral sepals. All plants had upright racemes. (**Editor's Comment:** *The awarded clone D. kingianum 'Bungan Castle' AM/AOC was recorded officially by OS NSW as measuring "14mm across the petals and 23mm across the vertical sepals" Although the flowers are smallish on this award winner "14mm" seems doubtful; and surely the reference to "vertical sepals" was intended to be "lateral sepals"!*)

Eric pointed out that the seedlings from the "selfing" showed a large variation in growth habit, many of the clones having very short pseudobulbs and with leaves shorter and broader than the normal *D. kingianum*. He is delighted with the results of his breeding programme to date, having obtained plants carrying upright racemes, open flowers of good colour and large size.

There is little doubt in my mind that in a few years Eric will produce specimen *D. kingianum* plants superior to his already excellent prize and award-winning specimens.

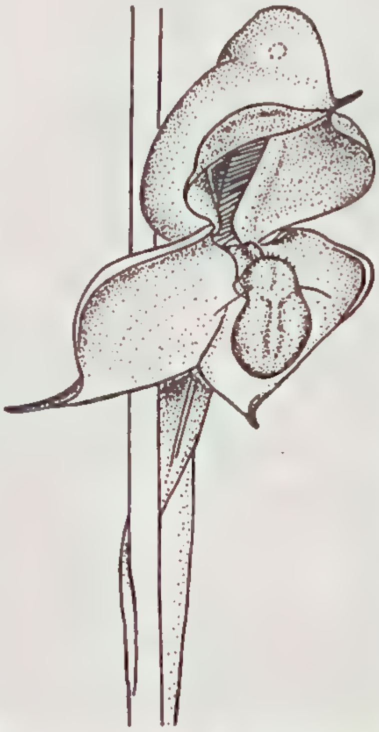
18.9.81 P.J. Collin

THE TERRESTRIALS

A marked increase in the number of temperate Australian terrestrial orchids was apparent at the ANOS Spring Show this year, and also at some other orchid shows in the Sydney metropolitan area. Whereas previously the terrestrial section was represented mainly by *Pterostylis baptistii* and species of *Phaius*, we now see a wider range of genera including *Caladenia, Glossodia,* and particularly *Diuris.*

Reasons for the increased interest include an improved understanding of their cultural needs, the need to preserve plants as their natural habitats are destroyed, and an appreciation of their beauty and strangeness of form. Some of the clones of *Diuris punctata* (mauve to white), *D. longifolia* (golden brown, often combined with purple), and *D. aurea* (deep yellow) seen recently are among the most beautiful of all our native orchids, while the strange shapes and floral mechanisms of the *Pterostylis* and *Caladenia* flowers are distinctive features of the Australian flora.

Pterostylis ceriflora
Blackmore et Clemesha [*Orchadian* Vol. 2: 156-8 (1968)];
Drawing: D.K. McAlpine (1981)



The appearance of a great rarity *Pterostylis ceriflora*, on the show bench reminds us that immediate measures are necessary to prevent the extinction of the species. Seedlings derived from the few plants in cultivation may be needed to augment the wild stock, once the habitat is secured. Most temperate Australian terrestrials are summer-deciduous, and the pots are best stored in a cool dry place when the plants die down, usually in late spring, till the tubers commence to sprout in March or April. During the growing season they may be subject to leaf-rot, especially in coastal climates, and shelter from rain and dew is desirable. Some growers have successfully checked leaf-rot by spraying with Previcur.

D.K. McAlpine.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New Registrations by the R.H.S. for July and August, 1981)

DENDROBIUM

HYBRID NAME	PARENTAGE	REGISTERED BY
Craig Hewitt	Emmy x *speciosum*	W.T. Upton
D'Bush Chic	*x superbiens x johannis*	D'Bush Orch. Nursery
Dusky Girl	Judy Leroy x *canaliculatum*	N.F. Noble
Graham Hewitt	Ellen x *speciosum*	W.T. Upton
Jamie Upton	*tetragonum x* Golden Fleck	W.T. Upton
John Upton	Kim x Ellen	W.T. Upton
DIURIS		
Pioneer	*maculata*† *x longifolia*†	L.T. & M.K. Nesbitt

† This symbol marks the first occurrence as a parent in hybrid registration of each of the following species: *Diuris longifolia, Diuris maculata* (N.B.: it is recommended by the R.H.S. that the generic name *Diuris*, which is new to registration be written in full, and it is not allotted any standard abbreviation.)

DIURIS PIONEER – TERRESTRIAL HYBRID

by Les Nesbitt

This story began in the early seventies. At that time I grew only two diuris species *Diuris maculata* and *D. longifolia*, which are the only species both common and widespread throughout the Mt Lofty Ranges near Adelaide. Since both flower in Springtime it was natural that when I got bitten by the hybridising bug I should try these two together. The result was astounding; but first a little about the parents.

Diuris maculata, the leopard orchid, has a single fat elongated tuber and two or three leaves. The tuber is unusual in that one or two roots grow from the bottom of the tuber as well as the cluster in the normal place at the base of the shoot just above the tuber. This fact is not apparent if only dormant tubers are examined. *D. maculata* carries 3-10 flowers in early Spring so is one of the most floriferous diuris species. Flower colour in this State is cream with large purple-brown spots all over the flower. The dorsal sepal is elongated whilst the ventral sepals are short and usually crossed over. The large stalked petals reflex back to attract insects flying overhead. They also attract humans effectively. The leopard orchid grows on the tops or sides of hills in open eucalypt forest in the higher rainfall areas of this State. It does not like heavy shade or dry soil in the growing period. I grow it in plastic pots of at least 170mm diameter in my usual fine soil mix. It does not thrive in clay pots under my conditions. It is a hardy species and a plant will flower reliably year after year even if it carries several seed pods annually as my plants are made to do. Plants occasionally make two tubers but are usually propagated from seed. A strong plant grows to about 300mm tall but most specimens are shorter. It is the first of the local diuris to bloom. My plants are always at their best at the end of August in Adelaide.

Diuris longifolia has many descriptive common names, e.g. Donkey orchid, Wallflower diuris, Puppydogs and Double tails. The flower is large and flat so that it presents itself very well to potential pollinators (or judges). Plants bear 2-5 cream and brown flowers on stems which are about as tall as the previous species. In poor soil only 1 or 2 flowers on stems about 100mm tall are produced. It is a colony forming species and can be made to multiply rapidly by breaking apart the 2 or 3 long thin tubers during the dormant period. They look just like spaghetti and can be up to 250mm long. The tubers will often shoot from both ends so can be broken in halves. Thus an annual increase rate of 4 or 5 is possible; which is as good as you can hope for from any terrestrial. It can be a shy flowering species especially if disturbed. Once you have a pot full of plants do not repot for 2 or 3 years and it will usually flower well from the second season after repotting. *D. longifolia* flowers about 2-3 weeks later than *D. maculata* but the flowering times overlap. The dorsal sepal of *D. longifolia* is semicircular in outline and the stalked petals are large and upright. The ventral sepals are short and green and usually do not cross over. Each plant has two or three grass-like leaves.

I first crossed these two species in 1971 and scattered the seeds on top of a pot of *D. maculata.* The following year several single leaved seedlings appeared. Two of these seedlings flowered in 1974. The plants were very robust with 3-4 leaves and bore flowers larger than either of their parents. The first clone to flower had cream flowers streaked and blotched with red-brown. The second was quite different in appearance. It was a flatter flower of a creamy-brown colour without the deep red-brown markings. I found a third distinctive tuber when I repotted the following summer. This plant flowered in 1975 and was similar in appearance to the first clone which I later called 'Big Ears'. I have tried many times to pollinate the hybrid plants using both parents and other diuris species. All were unsuccessful except when the second clone, which I call 'Prince', was used. This will produce pods and seeds but I have so far failed to get any seed to germinate. There is no viscid disc in my hybrid flowers and the pollen when dug out of a flower is mushy and does not look normal.

The tubers of the hybrid are large and elongated but they shoot at one end only. Each tuber is up to 12mm in diameter and can be up to 150mm long. They grow horizontally like *D. longifolia* and a large plant may form 2 or even 3 tubers. Plants grow up to 630mm tall and carry 8-

10 flowers up to 45mm across the petals. The dorsal sepal of D. Pioneer is tall and wide, gaining the best features from both parents. The flowers open progressively from the bottom of the spike. Each flower lasts 7-10 days so unless conditions are ideal it is hard to get more than 5 or 6 flowers out at one time. Each of the parent species also has flowers which last only 7-10 days.

I have remade this cross several times using diffrent parent clones. The five clones which I had flowered at the end of 1980 were all raised around 'mother' plants in pots. Four clones are similar in appearance, with the streaking and blotching of colour from *D. longifolia* so frowned upon by the judging standards that they would gain no points for colour. I think that our standards should be used as a guide only with the characteristics of the parents considered when hybrids are being appreciated.

This year I flowered the first plant from a batch of D. Pioneer seed which was flasked. I made this particular cross on 29-8-1977 and flasked it on 20-2-78. Tiny seedlings were planted out in Winter 1979 and the first plant flowered in Spetember 1981. It was a long wait for the flower which was disappointing with narrow elongated petals. These may improve as the plant matures and anyway I can look forward to another batch of seedlings next year. In the meantime the earlier clones had prospered and I now have many plants of each. They are a feature of the Spring shows in Adelaide, growing and flowering in 250mm plastic tubs. I repot them each year into fresh soil. This does not stop them flowering. My soil mix is 45% soil, 40% sand and 15% peatmoss with a small amount of blood and bone. I do not fertilize during the growing period. Plants are grown under 50% shadecloth. The hybrid occurs naturally as occasional scattered robust plants. These also are apparently sterile.

Since I was using the clone 'Prince' in second generation hybrids I decided to register the cross in September 1980. The name D. Pioneer seemed appropriate because I wanted a real "Aussie" name and there were no deciduous Australian terrestrial hybrids registered at that time. Written notification that the registration was accepted came in August 1981. It seems nothing can be hurried these days. Hybridists have to live a long time to see the results of their work. D. Pioneer is only one of many diuris crosses which have been made to extend the colour range, flowering period, and lasting qualities of diuris blooms.

November, 1981

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BIOLOGICAL CONTROL VERSUS TOXIC CHEMICAL PESTICIDES?

Following a lecture delivered to the ANOS Sydney Group during 1981 by a N.S.W. government researcher, your editor sought further information on the commercial availability of predatory mites in Australia. The lecturer had been unable to provide such information at the time; but I now have some brief notes on the subject from Mr Stephen Sexton, Manager of "Biocontrol" in Warwick, Queensland. I feel that many readers who are worried about the use of toxic chemicals and the build up of immunity to them amongst insect pests in our orchid collections, will be keenly interested in this new control device and will be watching for developments and experience in the technique.

Any practical experience in this field by our readers will be welcomed for publication. — Editor

Predatory Mites for Red Spider Mite Control

— Stephen Sexton

The predatory mite, *Phytoseiulus persimilis,* has been used for over a decade for control of the two-spotted mite or red spider mite *Tetranychus* species, in U.S.A., Europe and the United Kingdom.

Initially it was used mainly for control of two-spotted mite in greenhouse crops such as chrysanthemums, carnations and vegetables. More recently, it has found application in the control of two-spotted mite on a much wider range of greenhouse ornamentals, as well as strawberries and other field crops.

Research conducted by the Victorian Department of Agriculture has recently shown that predatory mites give excellent control of two-spotted mite in commercial orchid houses.

Predatory mites feed exclusively on two-spotted mite and multiply more rapidly than the pest. Consequently they are able to overwhelm two-spotted mite infestations within a few weeks and thereafter maintain prolonged control. A balance is reached in which on one side there are always a few two-spotted mites, well below the level where they could be considered a pest, while on the other side a few predators survive. Providing this balance is not disturbed (e.g. by using an unsuitable insecticide for control of another pest) two-spotted mite should remain under complete control for the duration of the season or longer, depending on the circumstances. Occasionally the predators may completely eliminate the prey and consequently starve. To be assured of two-spotted mite control, it is safest to re-introduce the predators annually.

Phytoseiulus persimilis has been found naturally in a number of locations in Australia and it would appear to be capable of surviving outdoors in most parts of the country. In experiments conducted by the Victorian Department of Agriculture, the predatory mites maintained control over two-spotted mites on orchids in greenhouse temperatures reaching 40 degrees centigrade.

There are some limitations which must be taken into account when using the predatory mites. Firstly, they take several weeks to establish and overcome the two-spotted mites. If a two-spotted mite outbreak is in full swing, it is better to use a half strength miticide (Kelthane or Omite) to reduce the pest numbers before introduction of the predators. Secondly, care must be taken in the choice of insecticides used to control other pests. Pirimor (Pirimicarb) is best for aphid control and Dipel (*Bacillus thuringiensis*) for caterpillar control. Organophosphate type chemicals can be used when the above are unsuitable without risk of completely eliminating the predators. However, Carbaryl and the synthetic Pyrethroid group of chemicals (Permethrin, Bioresmethrin, etc.) must be avoided or limited to spot applications. Most fungicides are safe in this context. However, lime/sulphur and Benlate (Benomyl) should be avoided if possible.

A pack of 1000 predators should be sufficient to give control in a small commercial orchid house or an average home garden, providing the predators are released at strategic locations where two-spoteed mites are known to occur.

The predatory mites have a number of important advantages for the orchid grower. Once established, they give a complete and long-lasting control of the two-spotted mite. Their use overcomes the need for frequent recourse to toxic miticides with the consequent risks of plant damage, pest resistance, destruction of beneficial insects and poisoning of the user.

Who's Who

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A.N.O.S. Council:
President: N. Hilliger; Vice-Presidents: K. Edwards and E. Husted; Secretary: B. Butler; Asst. Secretary: M. Harrison; Editor: J.J. Betts; Asst. Editor: P. Weston; Councillors: F. Martin, G. Wells, D. McAlpine, I. Palmer.

A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

NEW SOUTH WALES

- *Sydney Group:* Tel.: (02) 53 5956
  Meets 8 p.m. 2nd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099
  Meets 8 p.m. 2nd Thursday, Stony Range Flora Reserve, Pittwater Road, Dee Why.
- *Newcastle Group:* Tel.: 48 9109 – Meets 4th Wednesday, John Young Community Hall, Thomas Street, Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
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Volume 7, No. 3

March, 1982

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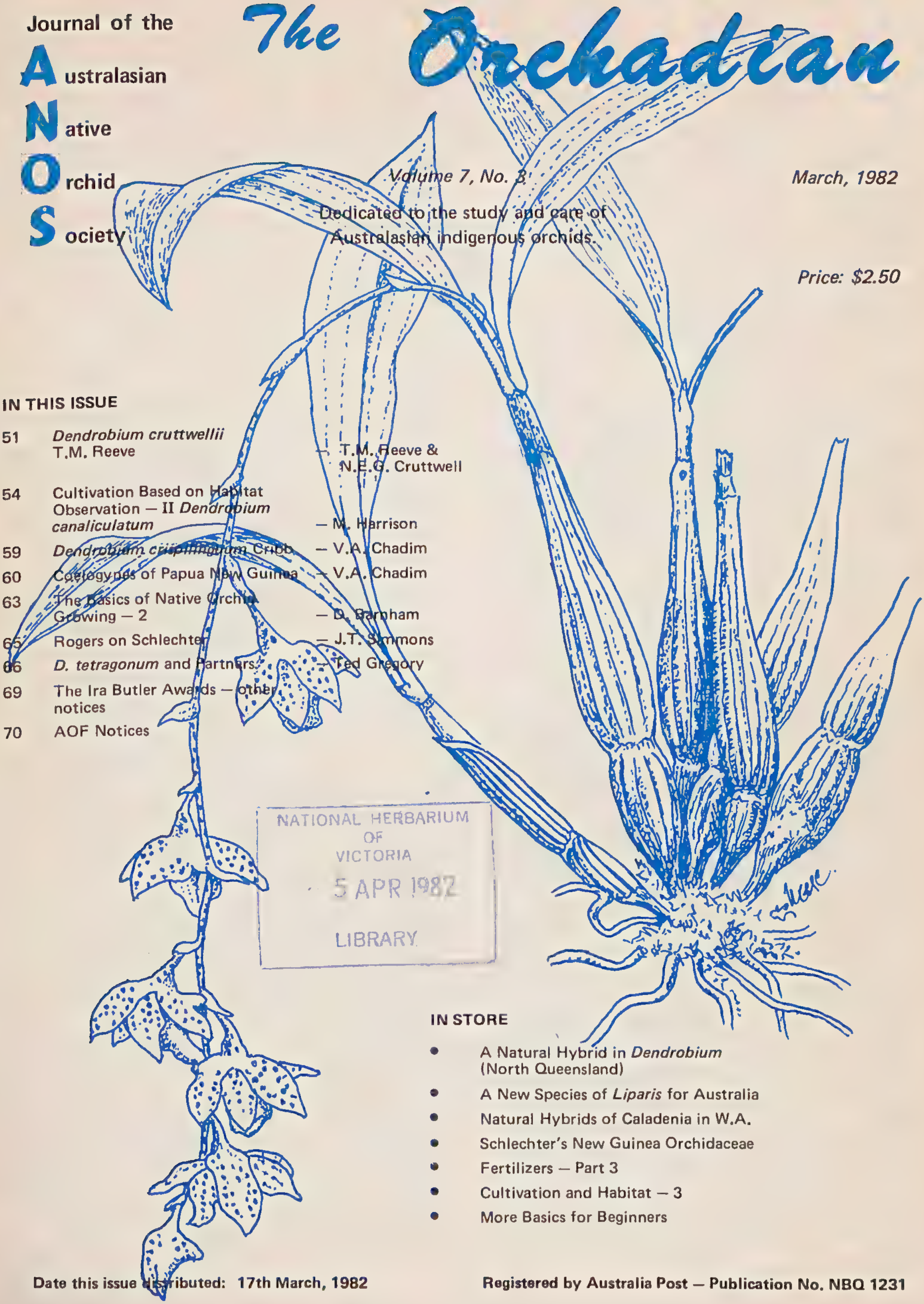

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THE ORCHADIAN

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Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

The present Council of ANOS comprises a number of new councillors and, as a team, is proving to be not only enthusiastic but also active. Since taking office six months ago this team has defined its main objectives and adopted a number of projects. The effectiveness of its programme cannot be fully appreciated by all members immediately and it is not my intention to list the projects on hand or to anticipate results. It is appropriate, however, to express my confidence in what Council is doing and to pass on to members a message from the Secretary, Brex Butler.

This relates to the questionnaire-survey of members' views to which I referred in a footnote to one of the "Letters to the Editor" in the December 1981 issue (p.38). This survey has been carefully planned, on sound statistical lines, by the Secretary and tested by Council. It should give us reliable guidance for future action. A random sample of the total membership has been selected and these members have been sent their questionnaire forms by now. Our message to these recipients is to ask them to complete the form and return it quickly. By doing so they will not only facilitate Council's work but also qualify for inclusion in a lottery for a valuable prize in the form of an order for orchid plants — provided the completed questionnaire is received on time.

For the information of members not participating in the survey it is desirable to explain that it seeks opinions on the general activities of the Society and not simply the Society's quarterly journal. Readers may look forward to reports in due course on the results of the survey, on decisions taken and progress on any projects adopted.

Meanwhile Autumn is upon us. The growing season continues for many orchids but Winter dormancy is not far off, so maintenance of the shadehouse and the glasshouse may well be your main activity until Spring comes round again. A few years ago Ted Gregory in his Autumn notes, referred to the beautiful crop of new canes hardening off with the approach of Winter. He referred to the chewing types of insect giving up for the season but counselled us to keep a watchful eye until the weather has definitely cooled off; otherwise those new canes could be eaten out before flowering time comes. Don't let this happen to your contender for the Ira Butler Award (see p. 69).

FEEDBACK AND FOLLOW-UP

- Gloria Barretto, whose paper describing a new *Habenaria* species in Hong Kong appeared in *The Orchadian* Vol. 7, No. 1, of September, 1981, informs me that *Peristylus goodyeroides* (D. Don) Lindl. (referred to in the same issue of *The Orchadian* by both P.S. Lavarack and N.H.S. Howcroft as being closely related to the Australian species, *Peristylus banfieldii*) is also indigenous to Hong Kong. As it flowers in July-August, Mrs Barretto offers to send to those authors, if they wish to examine Hong Kong material, a few flowers in liquid preservative (in August 1982).
- Mrs Barretto, by the way, has asked why the name of our journal is spelled "Orchadian" and not "Orchidian"? I am afraid I have never been able to answer this question — which has been asked by others from time to time. Neither of these words is to be found in the Oxford English Dictionary of course. But anyone can coin a new name and I guess my predecessors who founded the journal must have had their reasons. I like the word "orchidian" especially since seeing it used in a light-hearted vein by H.M.R. Rupp in a letter to his friend Fordham. The Rev. Rupp was referring to the possibility that a young friend might become an "orchidian" (orchid enthusiast). Incidentally the "Oxford" does have "orchidean" as "pertaining to orchids"; but for better or for worse we have *The Orchadian* — which has made its own name honourable by reason of frequent references embedded in scientific books and journals over the years. There can be no changing its name after almost twenty years!
- Letters to the Editor are conspicuously absent from this issue — because space is not available. Indeed there were more letters than ever during this quarter — most of them from the "slient majority" which has no complaints. It has been gratifying to have so many letters supportive of past and present policy. To those writers I express my thanks here — and my regrets that this quarter's space does not allow publication of more than a few extracts from your letters. I trust that this temporary situation will not discourage letter writers for future issues.

- **EXTRACTS** (out of context but irresistable):
  - I would like to congratulate you on your endeavours and the production . . . in such a difficult interface between true professionals and the layperson in this biological world more than a happy medium has been achieved (Dr J. Scott-Findlay, A.C.T.)
  - With orchid nomenclature such as it is . . . the hybridist and the hobbyist who enjoys his natives should appreciate the attempts of the "scientific elite" to sort out the names of their species and parent plants, to eliminate chaos in the register of new hybrids (N. Howcroft, P.N.G.)

Dendrobium cruttwellii T.M. Reeve (Section *Latouria*)

by *T.M. Reeve & †N.E.G. Cruttwell

Dendrobium cruttwellii is one of the lesser known members of section *Latouria* but its small brown stems, petiolate leaves and delicate pendulous flowers make it an attractive plant and worthy of the attention of species growers. This article provides a description of the species together with notes on its distribution, habitat, flowering and cultivation.

Dendrobium cruttwellii T.M. Reeve in *Orchadian* 6(7) : 152 (1980).

Synonyms:

Sayeria paradoxa Kraenzl. in *Oesterr. Bot. Zeitschr.* 44 : 298-300 (1894).

Dendrobium sayeria Schltr in *Fedde Rep. Beih.* 1 : 483 (1912), non *D. sayeria* Schltr, 1907.

Description: *Plants* epiphytic, stems horizontal to upright, forming clumps up to 25cm high; *roots* smooth, thick, up to 3.5mm diameter; *rhizome* extremely short; *pseudobulbs* ovoid to fusiform or fusiform-claveate, usually somewhat curved, brown to reddish brown, often glossy (new stems are yellowish green), 3-13 x 0.5-1.8cm, each new stem bearing 2 (occasionally 3) leaves at the apex with purplish-maroon; *leaves* petiolate, lanceolate-elliptic, acute, fairly thick, 5-16 x 1.6-4.0cm; *inflorescences* terminal, pendulous, 3-12 flowered; *peduncle* slender, 6-10 x 0.1-0.15cm; *rhachis* 2-13cm long; *flowers* usually widely opening, approx. 3cm in diameter, creamy-white to whitish-green, spotted and flecked purple to maroon on outside of tepals and on the labellum (the amount and intensity of the markings varies considerably), labellum apex greenish-white, callus white, ovary green lightly spotted purple; *dorsal sepal* oblong-ovate, acute, approx. 1.5 x 0.9cm; *lateral sepals* triangular-ovate, acute, approx. 1.5 x 1.0cm; *petals* oblong-spathulate to elliptic, approx. 1.3 x 0.6 cm; *labellum* somewhat hexagonal in shape with margins infolded near apex, approx. 1.5 x 1.3 cm (flattened), with prominent median callus which is 3-ridged at apex end; *column* approx. 2.5 x 2.5 mm; *column foot* approx. 9mm long; *pedicel/ovary* approx. 1.5 long.

Note: The two illustrations show some of the variation that is observed in the pseudobulbs of *D. cruttwellii*. Fig. 1, with a few short somewhat ovoid pseudobulbs, shows a common form of young plants. Mature plants usually have longer, more slender stems which are often curved. Fig. 2 shows rather an uncommon condition with the stem sharply contracted at the central node. This condition is sometimes seen on several other New Guinea *Dendrobium* species, for example *D. finisterrae* and *D. violaceum.*

Holotype: Sayer 6 (Location is uncertain — possibly it was destroyed at Berlin in 1943, though an isotype may exist at the Melbourne herbarium).

Distribution: D. cruttwellii has been found in isolated pockets of the Central Range of Papua New Guinea, extending from the Milne Bay Province (Longitude : 149° 30′ East) to as far west as the Enga Province (Longitude : 143° 45′ East). It grows between 1800 and 2400m, but in any particular area *D. cruttwellii* is usually found to be very localised within a narrow altitudinal range. For example, on Mt Kaindi it is an abundant epiphyte between 2000 and 2150m on the northern side of the mountain, but it is hardly seen at all above or below this narrow altitudinal band. (*N.B.* On the same mountain two other section *Latouria* species, *D. mayandyi* and *D. terrestre* were found from approximately 1900m right up to the summit at 2360m). This same observation for *D. cruttwellii* was made with the *Reeve* collections both at Woitape and in the Enga Province (Nos. 390, 438). On Mt Kesegete in the Eastern Highlands Province, two pockets of this species were discovered — one at approx. 2000m and the other just above 2300m.

A full list of herbarium collections is as follows:

Milne Bay Province: Cruttwell 1690 Mt Param, Daga, Rabaraba District, 1800m, May 1974 (LAE).

Central Province: Sayer 6 Mt Obree, 1800 — 2400m (*Note:* This appears to be a standard altitude range for all Sayer's collections on this part of Mt Obree: it does not necessarily mean that any species was found over this full range), August 1887 (Location not known), *Croft & Lelean* NGF 34765 Kagi Gap, Kokoda, 1920m, September 1973 (LAE, L. BRI, CANB, AMES, K); *van Royen* NGF 20364 Mt Awormange, Woitape, 2100m, January 1965 (LAE), *Millar* NGF 40992 Avios, Woitape, August 1969 (LAE); *Reeve* 390 Ero-Avios Track, Mt Albert Edward, via Woitape, Goilala District, 2000m, July 1979 (LAE, K).

Morobe Province: Schodde (& Craven) 4920 Aseki, 2000m, April 1966 (CANB), *Millar* NGF 22834 Forestry Helicopter Survey (Locality not given, near Lake Trist according to N. Howcroft), 2300m, February 1967 (LAE), *Streimann & Kairo* NGF 35918 Piwi'anga, Menyamya — Kaintiba road,, 2000m, May 1968 (LAE, BFC, L, BRI, CANB, AMES); *Clunie* NGF 63041 Watut Mtns, Wau, 2000m, February 1975 (LAE, K), *Reeve* 540 Mt Kaindi, Wau District, 2000 — 2150m, May 1981 (LAE, K, MEL).

Eastern Highlands Province: Robbins 889 Namaro, Benabena valley, 2000m, September 1957 (CANB); *Reeve & Cruttwell* 533 Mt Kesegete, via Namaro, Benabena District, 2000 – 2350m, April 1981 (LAE, K, L, E, CBG, UPNG, AMES, NSW, BISH, BO).

Western Highlands Province: Meredith s n Jimmi Valley, August 1954 (LAE).

Enga Province: Reeve 438 Silim, Kompian District, 2300m, February 1981 (LAE, K, L, E, CBG, UPNG).

Habitat: D. cruttwellii has an interesting and unusual habitat for a section *Latouria* species. It is commonly found as a low epiphyte in quite thick (heavily shaded) forest – usually less than 3 metres above the ground. Rarely is this species seen above 4 metres. However such habitats are invariably subject to breezes or good air movement – often on quite steep slopes or forested ridge tops. On Mt Kaindi, where parts of the forest are disturbed due to gold-mining activities, *D. cruttwellii* was also found to be quite common in some regrowth areas.

The plants are found on small branches and trunks (often not firmly affixed) and usually grow horizontally out with the tops of the stems and leaves turned upwards and the pendulous flowers hanging below.

Flowering and Cultivation: This species will flower at any time of the year in Papua New Guinea and the flowers last about 3 or 4 weeks at Laiagam. Once our plants are firmly established it may be that the flowers will last longer. *D. cruttwellii* grows well on tree fern fibre under 60% shade in P.N.G. Mr P. Spence has grown this species for a number of years in Sydney and has produced some attractive hybrids from it (*N.B.* In his nursery this species was previously referred to as *"D. rhomboglossum"*).

***Dept. of Primary Industry**
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P.N.G.
July 1981

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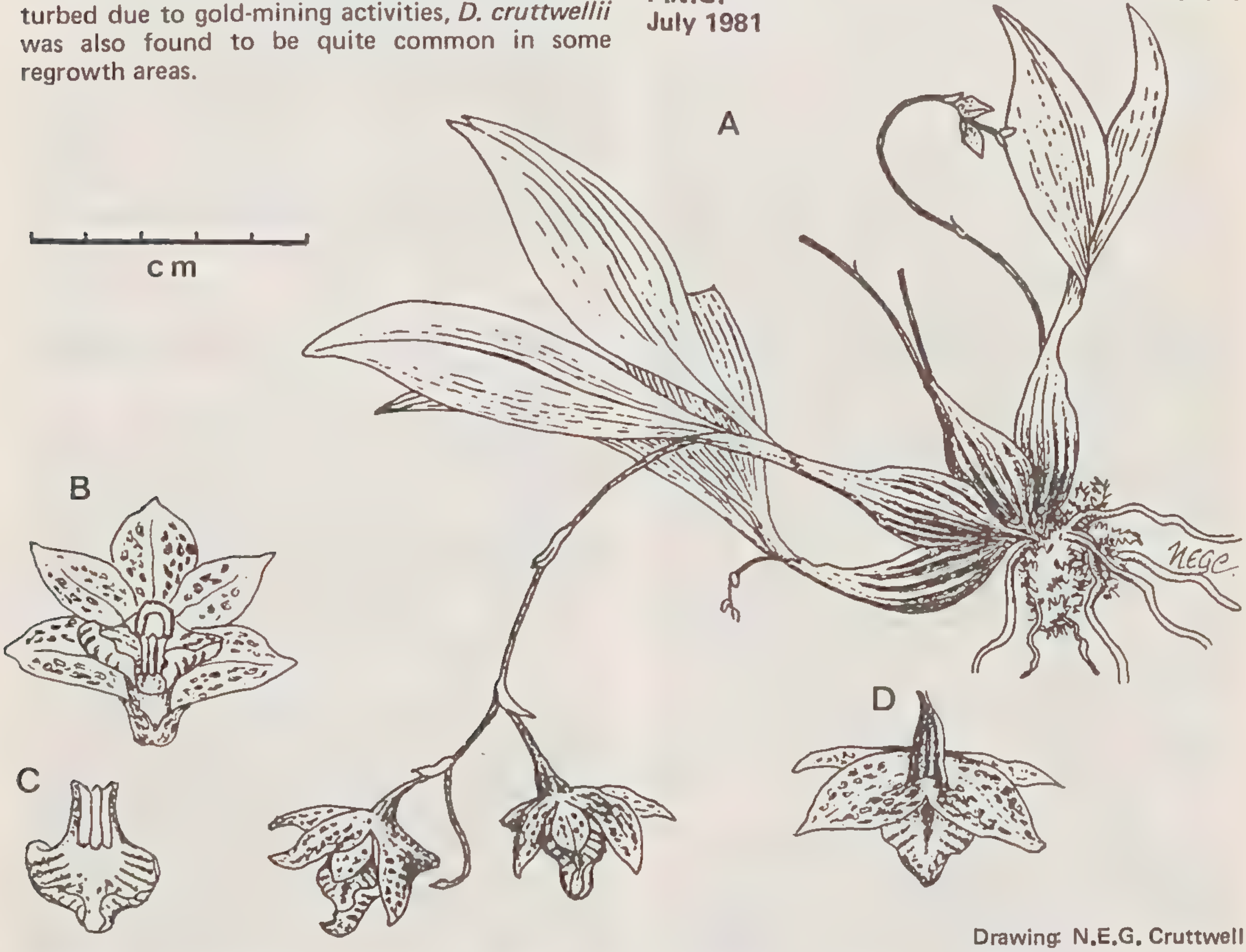
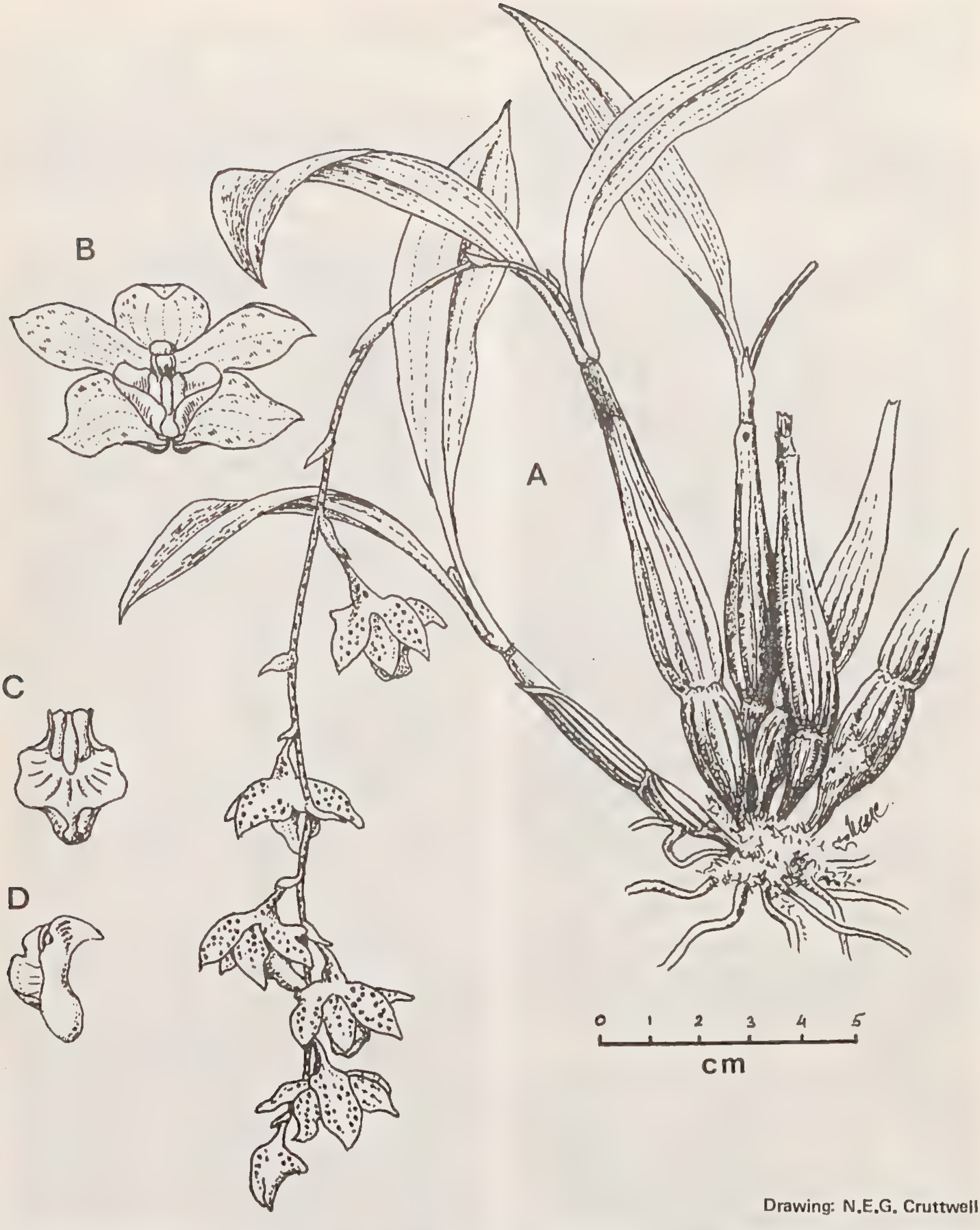


Drawing: N.E.G. Cruttwell

Figure 1: *Dendrobium cruttwellii* from Mt Param, Milne Bay Province (*Cruttwell* 1690). Drawn by N.E.G. Cruttwell in May 1974.

A Plant B Flower (front view) C Labellum D Flower (ventral view)
A to indicated scale, B – D to scale x 2.



Drawing: N.E.G. Cruttwell

Figure 2: *Dendrobium cruttwellii* from Mt Kesegete, Eastern Highlands Province (*Reeve & Cruttwell* 533) Drawn by N.E.G. Cruttwell in April 1981.

A Plant B Flower C Labellum (top view) D Labellum (side view)
A to indicated scale, B — D to scale x 2.

CULTIVATION BASED ON HABITAT OBSERVATION

II . . . *Dendrobium canaliculatum*

by Mike Harrison

One of the most widely cultivated of our tropical epiphytic orchids is certainly *Dendrobium canaliculatum* and, when properly grown and flowered, it also must surely rate as one of the most beautiful and spectacular. I have always felt a little ill at ease with its common name of "Onion Orchid", I suppose because it is not very flattering, but I will admit a certain similarity does exist. In Queensland it is known as the "Tea Tree Orchid", a name I much prefer.

Varieties

D. canaliculatum, in its various forms, is distributed throughout eastern Queensland north of the Fitzroy River (Rockhampton) and also extends into New Guinea, where it has been recorded from the Fly River area. One of its varieties, *var. foelschei*, is restricted to the top end of the Northern Territory, where it is the only variety representing the species. Unfortunately, this variety is of limited value horticulturally, because of its small drooping flowers which tend not to open very widely. One interesting feature of *var. foelschei* is however, its range of colour. Plants which were sent to me from Darwin a couple of years ago, and which were all originally collected from a single fallen limb, flower regularly each year in my glasshouse and range in colour from a pale lemon yellow through to a light claret, with intermediate shades of khaki, tan and mauve, and with no particular colour predominating. Although not strong colours, they are quite distinct, and the fact that they all originated on a single branch would indicate a considerable colour range within *var. foelschei* generally. Vegetatively, *var. foelschei* is indistinguishable from the other varieties of *D. canaliculatum.*

At this point I should mention that when referring to colour of flowers I am speaking about the distal portions of the segments. *D. canaliculatum*, as a species, is quite variable in colour, but usually the segments are bi-coloured, being white or, occasionally, light green at the base and, depending on variety, yellow, brown or purple on the tips of the segments. Although there are morphological differences separating the varieties it is colour that growers generally use as a means of identification.

The two common varieties of *D. canaliculatum* (*var. canaliculatum*, which is yellow, and *var. nigrescens*, which is brown or tan) present us with an interesting study in distribution. Although they thrive in virtually identical habitats, particularly in the dry woodland/savannah areas, they maintain quite separate distributions, occurring together in only a few places on the tablelands west of Cairns. *Var. canaliculatum* is predominantly an orchid of coastal areas, occurring from about the Fitzroy River northwards to the Endeavour River (Cooktown) although in many areas it does extend quite a distance inland and occurs up to about 800 metres on the ranges. *Var. nigrescens*, on the other hand, extends from the northern end of the Atherton Tableland to the top of Cape York, and occurs mainly away from the coast for a great part of its range, apparently not approaching the sea until quite a distance north on the Peninsula. These distributions appear to be maintained quite absolutely, and although the two varieties are often considered to be little more than distinct colour forms, there is obviously a constant genetic difference between them. As is the case with the distributions of quite a few orchids, and I am thinking here particularly of *Dendrobium speciosum*, as presented by Clemesha in *The Orchadian*, Vol. 6 No. 11, it is difficult to understand why one variety should suddenly, and quite definitely, take over from another, with very little, or even no, overlapping of range. One point of interest is that the photograph of *D. canaliculatum* shown in Andreé Millar's "Orchids of Papua New Guinea", looks very much like *var. canaliculatum*, which in Australia appears to be restricted to areas south of the Cooktown region!

The final variety of *D. canaliculatum* is *var. pallidum*, of which I know nothing apart from Dockrill's description in "Australian Indigenous Orchids". It would seem to be quite a distinctive variety with stout, untwisted segments and a pure white labellum. It would probably be a valuable addition to any collection.

A recently described form I must mention is that reported by Dr P. Lavarack in the A.O.R. March 1977, as occurring near Iron Range, and again in the A.O.R. June 1980, occurring in the McIlwraith Range area. As Lavarack states, this form "probably represents an undescribed variety" and, from specimens I have seen, is quite distinct in both colour and shape. The petals are a bright reddish/purple in colour, while the sepals, which are relatively short, are white with just a hint of the purple colour suffused down the centre. The labellum is wholly yellow with no purple markings. It is an attractive form but unfortunately appears to be very uncommon.

Habitat

Throughout the whole of its range, *D. canaliculatum* grows nearly exclusively on "paper-bark" trees, predominantly *Melaleuca* species, and occurs from the lowland "tea tree" swamps to the dry woodlands of the interior, where few other epiphytes are able to survive the harsh conditions the dry season annually inflicts. In these savannah areas *M. viridiflora*, a small tree averaging about 5 metres in height, is by far the most common host, although in damper areas and along creeks *M. symphiocarpa* and *Pandanus spp* are also seen. In the lowland swamps and along the larger waterways near the coast *M. leucadendron* is a major host tree, along with *M. argentea* and *M. dealbata*. In some areas of its range, notably the woodland/savannah areas, it is exposed to fire on a fairly regular basis and, although usually "cold" fires of low intensity, they nevertheless restrict orchid growth to the upper limbs of the trees. These fires are not restricted to Cape York Peninsula but are also a feature in many areas in the north of the Northern Territory. They usually occur during the late winter and spring, near the end of the "dry season", and are commonly started by cattlemen to provide improved grazing for their herds, although many are sparked off by lightning during the wild electrical storms in the lead-up to the "wet season".

D. canaliculatum invariably grows in positions where it gets plenty of light, often high up on its host but not always; many plants are found in situations that are exposed to full sun for most of the day. These particularly exposed plants often take on a purplish colour which is not unattractive.

Cultivation

When considering the culture of this orchid, an understanding of tropical weather patterns is essential in creating an environment that approximates its natural habitat. As the name implies, the "wet season" is indeed so, with heavy rain falling virtually evey day, usually in the late afternoon, during the period December to April, reaching a peak in February/March. It is during this time that the plant makes its growth, a large rounded pseudobulb usually about 5 or 6 centimetres tall, and topped by 3 or 4 rounded, fleshy leaves. This is the time to water, for *D. canaliculatum* requires abundant moisture to develop properly. During this time of the year I water as least once every day, usually in the evening, and often, if it looks like being a particularly warm day, in the morning as well. I have a sprinkling system set up which, when turned on, fills the greenhouse with spray and completely wets everything in it. Eight or ten minutes each afternoon when I return home from work is enough to make the plants think they are in the middle of their daily tropical downpour. As the end of the wet season approaches, the developing pseudobulb in a healthy plant should have reached its full size and should have a somewhat swollen appearance with its skin stretched taut as if it might split. This, in fact, does sometimes happen leaving a permanent scar on the pseudobulb. Although unsightly, this does not appear to affect the plant at all. Splitting of a developing pseudobulb is a characteristic not confined to *D. canaliculatum*; it may occur in any of the genus *Dendrobium* which make fast-developing, fusiform pseudobulbs, and I have seen it happen on both *D. speciosum* and *D. ruppianum*.

As the "wet season" draws to a close, usually about May, the rain eases considerably, both in frequency and volume, and the annual "dry season" commences, a period characterised by a slow-down of plant growth generally due to the absence of significant rainfall. It is during this period of transition from "wet" to "dry" that the pseudobulbs mature or "ripen", meaning that they harden, change in colour from a lush green to a lighter green, often tinted with purple, and lose their acutely swollen look, developing a slightly ribbed appearance. These changes result from the increased levels of light which accompany the "dry season", associated with the reduction in rainfall, and are easily simulated under greenhouse conditions by doing exactly the same: reduce the shading on the greenhouse and at the same time slowly reduce the watering. Be careful not to allow the pseudobulbs to shrivel, a result of too drastic a reduction in watering, but also keep in mind that a pseudobulb which has not been allowed to mature properly will usually not flower well, and, because of its soft condition, is also prone to attack from insects and pathogenic fungi. Another associated problem which may occur if watering and shading are not reduced at this time, is that the plant may initiate another growth in response to what it interprets as continuing "wet season" conditions. This new growth is usually doomed to failure, and unless greenhouse conditions are adjusted to account for its development, wither it falls victim to fungus attack or simply fails to develop substantially.

Following maturation of the new pseudobulbs, plants of *D. canaliculatum* go through a period of dormancy which, in nature, coincides with the middle of the dry season, usually July. Growers refer to this dormancy as the plant's "resting period". It lasts only about 6 weeks and, as long as humidity levels are maintained, watering during this time should be restricted to just light mistings every day or two to keep the pseudobulbs plump and in good condition. The end of this dormancy is marked by the appearance by the developing flower racemes in the axils of the leaves. They may become evident as early as late July and they usually develop fairly quickly.

The final stage in the cycle of *D. canaliculatum* is, of course, flowering. Like each of the stages I have described, flowering is initiated as a response to both environmental factors and plant health in general, and relies on the previous stages of development having been completed successfully. Flowering occurs between September and

November, depending on conditions, and it is at this time that the grower will be rewarded for all the time and energy he or she has invested. By the time the buds are ready to open, watering should have been increased again to a level that will support the plant during this period of exertion. A good soaking every three or four days would probably be adequate. I shall not attempt to describe the joy of a really good flowering after a whole year of effort directed towards that end; let me just say that it is very satisfying.

After flowering has finished the cycle starts over again, with a new lead commencing from the base of the previous pseudobulb. Often there is quite a delay before this new lead appears, and, until it is well on its way, say 3 or 4 centimetres tall, it is probably best to again restrict watering a little to reduce the chance of fungus attack.

D. canaliculatum seems to be an orchid that people do not generally grow in pots, although I do have a small plant in a 10 centimetre square plastic pot that is doing reasonably well in a medium of shredded tree-fern bark. The reason for this prejudice against pot culture probably stems from the fact that it takes so readily to raft culture and, in particular, to establishment on a piece of "paper-bark", its natural host. In nature it seems non-specific about its sitaution on the host tree, and appears to grow as happily on small peripheral branches as it does on the main trunk. When establishing a plant in cultivation, however, I think it best to choose a reasonably substantial piece, say, at least 6 centimetres in diameter and 40 centimetres in length. This allows the roots of the plant plenty of room to move and development of a healthy root system is, of course, a prerequisite for healthy growth generally. Being a fairly vigorous grower, *D. canaliculatum* tends to have an extensive root system which, if impeded by too small a host, will not be able to sustain strong vegetative growth, which will, in turn, impede good flowering. The roots tend to penetrate the surface layers of bark, making their way into the deeper layers, which afford the roots a somewhat cooler and more protected environment than the surface would provide. It must be remembered that during the "dry season", the open woodlands in which this orchid occurs, receive very little rain, and the protection from heat and sun afforded the roots by these thick, papery layers account, in part, for its ability to colonise these seasonally arid areas. Penetration of the roots into the deeper layers is also important when considering the stability of the plant as a whole, for if the roots remained only on the surface, then the plant could quite easily be dislodged from its host.

As for choice of "paper-bark" in cultivation, I prefer *M. quinquenervia* (Broad Leafed Paper-Bark: extensively planted as a street tree in Sydney suburbs) because of its corky nature, but I'm sure that other species would do just as well. A characteristic of "paper-bark" logs in cultivation that must be mentioned is their susceptibility to borer attack. Although I do not suffer from this problem to any great extent myself, some growers seem unable to maintain lengths of "paper-bark" for more than a couple of years before borers have eaten away the timber completely, leaving a papery shell upon which the orchid plant is growing. Usually this problem is easily solved by obtaining a fresh length and inserting it into the vacant space. This procedure disturbs the orchid very little and gives the grower at least another two or three years of trouble-free growth.

Other hosts that I have used successfully include tree-fern fibre slabs, pressed sheet cork and coconut husk. Each of these will give good results as long as they are large enough to allow good root development. I have heard it said that pressed cork tends to break down and crumble after a couple of years, but to date I have not seen this in my collection and I have been using it for about five years now. I find it an excellent host for nearly any orchid, right through from fine-rooted *Bulbophyllum spp.* to heavy-rooted orchids such as some of those in the genus *Dendrobium.*

In my glasshouse I grow *D. canaliculatum* alongside other tropical dendrobiums such as *D. semifuscum, D. dicuphum, D. nindii, D. discolor, D. bigibbum* and in fact any of those orchids that prefer fairly strong light. I try to position them so that they receive maximum available light, most of them hanging in the airspace between the roof of the greenhouse and the benches below. I also do my best to keep them well spaced to avoid shadows being cast from one plant on to the next. The sides and roof of the greenhouse are painted white except for that part of the roof under which these orchids are grown. This section is not painted at all and is clear horticultural glass. During the months October through till April, I cover the whole roof area with 50% shadecloth which is rolled out across a chickenwire frame positioned about 30 centimetres above the glass. As well as providing shade, the shadecloth, because of the 30 centimetre air space, tends to keep the glass a little cooler than would be the case if it were resting directly on the glass. The chickenwire frame also protects against hail. During April I roll back the shadecloth to allow more light into the greenhouse, and from this time, through winter until the following September/October, *D. canaliculatum* and its companions under the clear glass are exposed to whatever sun falls on the greenhouse roof. As well as preferring strong levels of light these orchid species also have similar growth patterns, are all geared to a definite wet/dry climate, and are best kept together for ease of handling.

The greenhouse is heated in winter by a 2400 W electric fan-heater, thermostatically controlled to maintain a minimum temperature of about 14℃ (58°F). An internal circulation fan ensures that temperatures are kept constant throughout the greenhouse. In some areas, even as far south as Sydney, *D. canaliculatum* can be grown cold as long as it is kept dry during the winter. Mr Fergie Martin, of the Sydney suburb of Ermington, has a magnificent specimen mounted on a "paper-bark" log which he maintains on the northern wall of an unheated fibreglass house. My aunt at Avoca Beach, near Gosford, also has a fine plant established on the base of a large Blackbutt Gum (*Eucalyptus pilularis*) in her garden.

One problem I have encountered when using electric fan heaters is that humidity levels drop quite substantially when the heater operates for any length of time, such as during the night in the winter months. These low levels of humidity do tend to dehydrate plants, although probably not seriously, and will certainly affect flowering, causing premature aging of the flowers or even browning of the buds before they open. This problem is unlikely to arise with *D. canaliculatum* because it usually doesn't flower until September or October. If grown in a true warm greenhouse, however, the 18℃ plus (65°F) minimum temperatures will obviously tend to force flowering as early as July/August, and symptoms of premature aging (loss of texture and browning of the tips of the segments) may become apparent if humidity levels are allowed to drop excessively. I have overcome this problem in the past by attaching a humidifying device to the heater thermostat, so that when the heater comes on, so too does the humidifier. Although it does sound a little primitive, an old style travelling iron (the kind that ladies used to carry in their handbags — or so my mum tells me) resting upside down on a clay pot provides plenty of vapour when water is dripped on to its surface at intervals of 2 seconds. More recently I have used a "sick room" vaporiser, which blows a constant stream of vapour into the air when it switches on. This system works very well, although the capital outlay ($24.00) was considerably more than the single dollar I paid for the old travelling iron.

During the hot summer months, it is not uncommon for outside temperatures to go over the 40℃ mark in the area where I live. During these times, temperatures in the glasshouse have risen as high as 44℃, which is worrying in view of the fact that, according to horticultural literature, plant growth and metabolism cease at about 40℃. During the spring and early summer of 1980, the weather was particularly fierce in the Sydney region, especially in the western suburbs, and symptoms of arrested metabolic activity due to heat did appear in some of my plants. Apart from the more recognizable effects of excessive heat such as leaf scorching (large darkened areas on the leaves due to burning), leaf pitting (small areas of necrosis due to localised dehydration), and the occasional collapse of a developing pseudobulb, some of my plants, particularly *Sarcanthinae* species, suffered a type of stunting effect. This stunting was generally characterised by a reduction in the overall size of both leaves and pseudobulbs at their maturation, diagnosis being made difficult due to the very nature of the problem, for it did not become apparent until some months later at the earliest. In the final analysis, this stunting represented an interruption to the development of those affected parts. At least one plant in my glasshouse (a plant of *Flickingeria convexa*) ceased to grow completely and has only now, over twelve months later, begun to show signs of coming out of its dormancy. The pseudobulbs and leaves which were developing at the time remain deformed and in a state of semi-development. It seems unlikely that they will now develop further. It remains to be seen whether the new leads now commencing will develop normally but I suspect that they will. Developing growths of both *D. canaliculatum* and *D. semifuscum* were definitely affected and although they did mature and flower fairly normally they are appreciably shorter and thinner than pseudobulbs produced in previous years. Again it remains to be seen whether the new growths which are developing now will be normal; but I am sure that they will. As I close on this subject let me just say that the problems I have described above were the result of extreme weather conditions which forced greenhouse temperatures into the mid-forties every day for up to a week at a time. The problems of prolonged heat stress are not often encountered except in very hot climates or when greenhouse management is faulty.

To overcome the problems of summer heat, greenhouses must be well ventilated so that hot air can escape and fresh air, which presumably is cooler, can be introduced. This air exchange is usually achieved passively by allowing the hot air to escape through a vent(s) in the roof, which in turn draws in fresh air through vents positioned near ground level. If the greenhouse is to be heated during winter then obviously these vents must open and close. Over the last couple of years I have experimented with an evaporative cooler and an exhaust fan, thermostatically controlled to commence operating when the greenhouse temperature reached 30℃. I was disappointed with the results; for although the cooler certainly did humidify the incoming air, and the exhaust fan did seem to operate efficiently, neither device had any appreciable effect on the temperature. I am at a loss to explain these failures, for I have seen evaporative coolers used with great success in large commercial greenhouses. I have, however, found the exhaust fan very useful when used in conjunction with watering. I switch it on after I have watered (it is now operated manually and not thermostatically) and it quite quickly removes the steaminess from the greenhouse, a condition which often occurs following watering, especially in summer. The greenhouse atmosphere usually returns to normal within 10 minutes, after which time I switch off the exhaust fan and allow the normal venting to take over again.

One of the best, and also one of the cheapest, greenhouse environment devices that I have ever installed is the internal air circulation fan, which is a must in any closed or even partially closed set-up to avoid the formation of pockets of stale air. The fan should be positioned above the plants so that it is not blowing directly on to them. A good way to test its effectiveness is to stand near the opposite end of the greenhouse, holding a piece of cotton, or similar material, at about chest level. The movement of this cotton thread will indicate the amount of air movement at that point. The thread should move gently backwards and forwards but should not move vigorously. I have always used small fans, the kind that are retailed as "personal fans" for $10.00 or $12.00 with blades about 10 centimetres in length. Larger fans are more difficult to install and create too much air disturbance. Due to the fact that they are run continuously, night and day, winter and summer, they tend to break down after a couple of years, and I have been through several over the course of the last ten years.

Sadly, populations of *D. canaliculatum* (and *D. bigibbum* for that matter) in the wild, particularly the more accessible *var. canaliculatum*, have been seriously depleted in some areas over the last ten years or so. Professional collectors, often working illegally, have stripped extensive areas to supply specialist and non-specialist nurseries alike, and at least one large retail chain also continues to cash in on this destruction. I am never sure whether the regulations controlling the removal of native plants from the bush, and their subsequent resale, are simply inadequate or inadequately enforced. Either way, there is certainly something wrong with the system in its present form.

As I close on the subject of *D. canaliculatum*, may I urge readers to take another look at this orchid. Many growers have it in their collections; but too often it is overlooked or underrated and it is not often seen growing to perfection. I have never really found it a difficult orchid to grow, and although I have certainly had my ups and downs with it over the years I still have the original plant I was given in 1968. And please, when talking about *D. canaliculatum*, get the pronunciation right. Too many people leave out the second syllable, shortening it to "caniculatum", and driving me crazy in the process.

As with all cultural advice, the comments and observations contained herein are designed as guidelines only and require adaption to different situations and growing techniques. External weather conditions also play a very important role, and must be taken into account when making cultural decisions. I wish all readers the very best, for this is one of our finest orchids.

My thanks to Mr Peter Hind of the Royal Botanic Gardens, Sydney, for his advice in the preparation of this article.

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January, 1982

DENDROBIUM CRISPILINGUUM CRIBB – ADDITIONAL NOTES

by V.A. Chadim

Though the species was well described by Dr P.J. Cribb in *The Orchadian* 6 (8) : 177-178 and the flower is instantly recognizable from the drawing, some further observations should perhaps be recorded.

The dried specimen CH-4 and live plant I sent to Kew in 1963 came from Kainantu, but the species is quite widespread in the Eastern Highlands of New Guinea, in Arona, Kainantu, in the Asaro valley and throughout the Wahgi valley: Chimbu (Kundiawa), Kerowagi, Nondugl, Minj, Banz, reaching into the Western Highlands. All these valleys have been cleared of forests in the past, and *Dendrobium crispilinguum* is re-establishing itself quite well, growing on relatively young trees along the roads, often unprotected from the sun, at altitudes from 1300 to 2000 m.

Pseudobulbs can be up to 180 cm long and 3 cm in diameter, producing several inflorescences of 12 to 20 flowers from the upper part. The flowers I measured had sepals 33 mm long, 6 mm wide at base, lateral 7 mm wide. Petals also 33 mm long, 2 mm wide. Sepals and petals are normally yellow-green, changing to cream with age.

Labellum is 21 mm long plus 5 mm from basal hinge to tip of mentum. Mid-lobe 12 mm long, 6 mm wide, sidelobes erect, oblong, obtuse, 4 x 7 mm. I know no other member of the *Ceratobium* section with smaller sidelobes. The midlobe is deep violet on the inner surface, undulated margins white, sidelobes light with violet lines (Fig. 1).
views of an orchid flower is a vertical section. This is particularly so in the *Dendrobium, Ceratobium* section, where the structure of the flower, its pollination mechanism and the shape of the mentum can be clearly seen (Fig. 2).

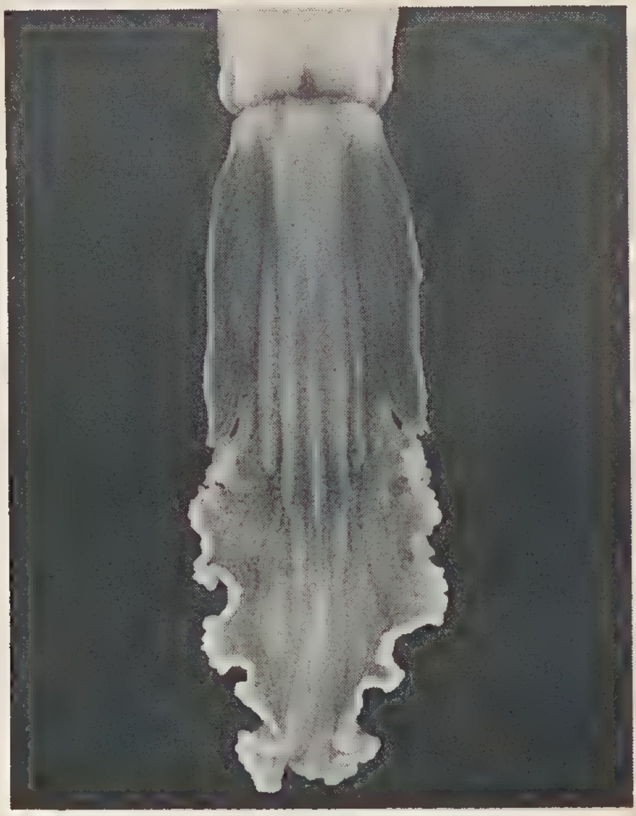

Figure 1: *Dendrobium crispilinguum*
Labellum. The mid-lobe is recurved, acute, but the tip is obscured here. The erect side-lobes cannot be seen in outline from this angle.

Dendrobium crispilinguum is distinguished by a broken outline of the upper surface of the mentum. The part near the ovary is 3 mm long, the horizontal continuation to the tip of the mentum 5 mm long. The column is pointing down, with the anther resting on the outer ridges of the labellum. The cross-section photograph shows how the anther cap is pivoted. The hairs on its lower edge are designed to catch on the back of a retreating insect, the anther is pushed forward and its sticky inner upper edge acts as a lever to eject the pollinia on to the back of the insect.

The species flowers in the dry season, from April to September, though I also observed flowers in January. The seed capsule takes 4 to 6 months to ripen.

5 September, 1981

5 Parker Street,
Curtin, A.C.T. 2605.

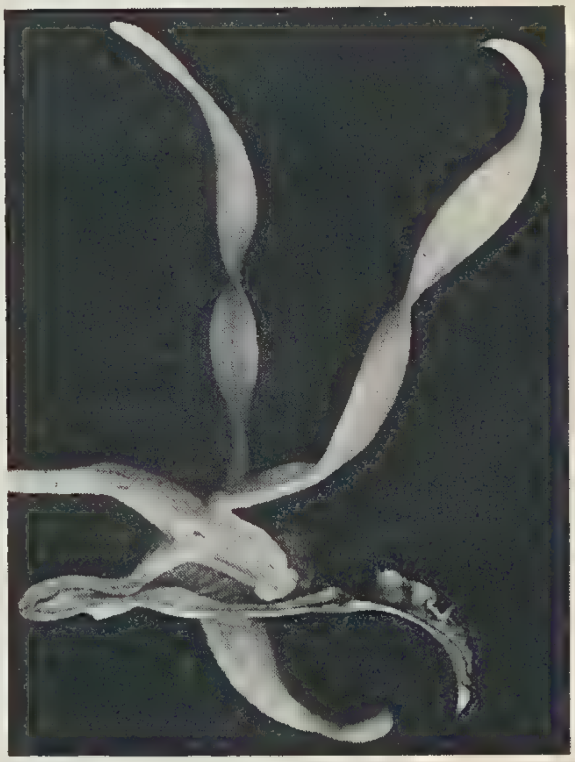

Figure 2: *D. crispilinguum*.
Flower cross-section.

Photographs by V.A. Chadim

COELOGYNES OF NEW GUINEA

by V.A. Chadim

Of all the New Guinea Orchids, none are as undeservedly neglected by orchid growers as the genus Coelogyne. There are only about seven species, but four of them produce large, showy flowers of beautiful colouring, and the best three of these are very robust plants growing just about everywhere in large numbers.

Schlechter noted that Coelogynes are epiphytes by nature, but often revert to vigorous terrestrial growth, develop particularly strong vegetative parts and stop flowering. The majority of New Guinea Coelogyne plants can indeed be found on the ground, producing large leaves and dozens of big, nicely filled pseudobulbs. Often they are half-choked by tall grass as well, yet they look very healthy and grow strongly at the expense of flowering. Only the plants that happen to grow epiphytically, or on exposed sunny locations, on rocky ground surrounded by small bushes and ferns but not very tall grass, flower well. Because of its wide distribution and sheer numbers, the most conspicuous species is *C. asperata Lindl.* (syn. *C. pustulosa* Ridl.). It grows at altitudes ranging from 100m to at least 1600m. At Garaina (7° 53'S, 147° 10'E, 600m) there are literally tons of *C. asperata* covering the ground in the scrub and forest between the airstrip and Waria river. The large, leathery, conical pseudobulbs of this species are easily recognised from another group of Coelogynes, which has smooth to glossy pseudobulbs. The main representative of this group is *C. beccarii Rchb.f.*, and two other species look the same when not in flower.

One is *C. fragrans** Schltr, the other is a species frequently confused with *C. fragrans* and sometimes with *C. beccarii*. For lack of a better name I will refer to it by my number CH-156.

CH-156 differs from *C. beccarii* by having very pronounced keels on the labellum, narrower sepals and petals and a very wide, helmet-shaped top of the column. It is so widespread that I cannot imagine Schlechter not having seen it, and for that reason it may well be what he described as *C. beccarii Rhcb.f. var. tropidophora Schltr.*

Schlechter changed his original intention of making it a new species when he found an intermediate form, but he expressed some doubts about the correctness of his decision. I think the

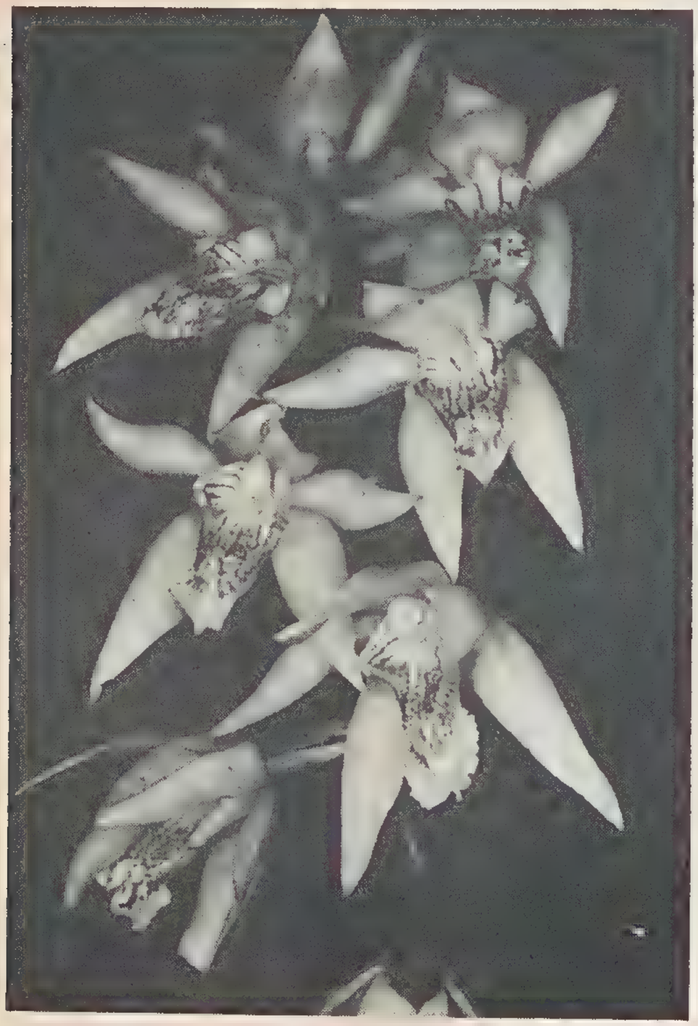

Fig. 1: *Coelogyne asperata* Lindl. (inflorescence)

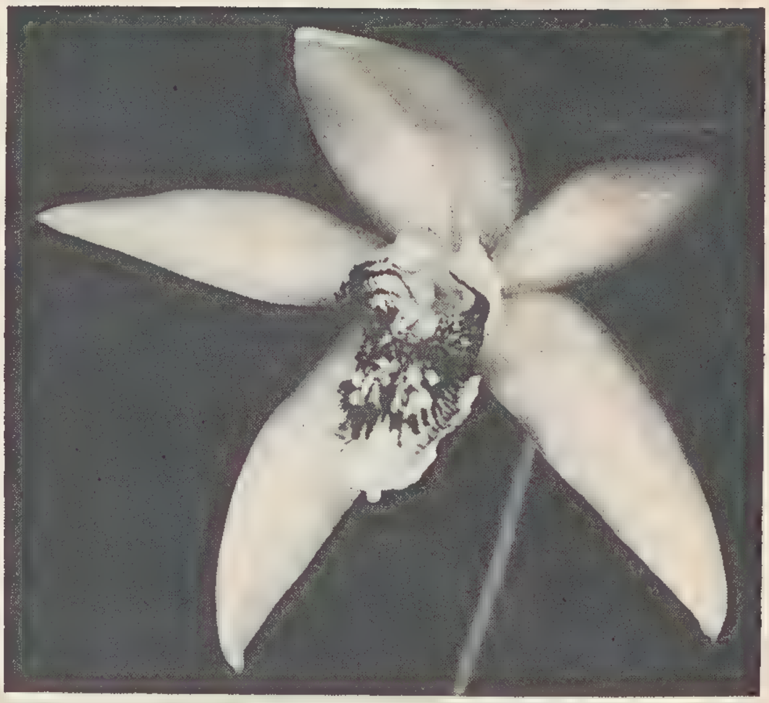

Fig. 2: *C. asperata* Lindl

Coelogyne asperata Lindl.

It is almost impossible to travel anywhere in Papua New Guinea without noticing the large plants of *C. asperata* Lindl, with their firm conical angular pseudobulbs and long leaves. Black and white photographs cannot do justice to these creamy flowers with a great range of colours on the labellum, from yellow through orange to chocolate brown.

The argument whether *C. pustulosa* Ridl. is a synonym of *C. asperata* Lindl is not fully resolved. Schlechter used the name pustulosa for a variety with deeply bilobed tip of the labellum.

intermediate form he observed could have easily been a natural hybrid, and I am inclined to regard CH-156 as a separate species – perhaps *C. tropidophora.*

The remaining three species have small flowers: *C. veitchii Rolfe, C. truncicola Schltr* and *C. alata.* I have never seen the last two, *C. alata* is mentioned, with a photo, in "Orchids of Papua New Guinea" by Andree Millar, without author's name.

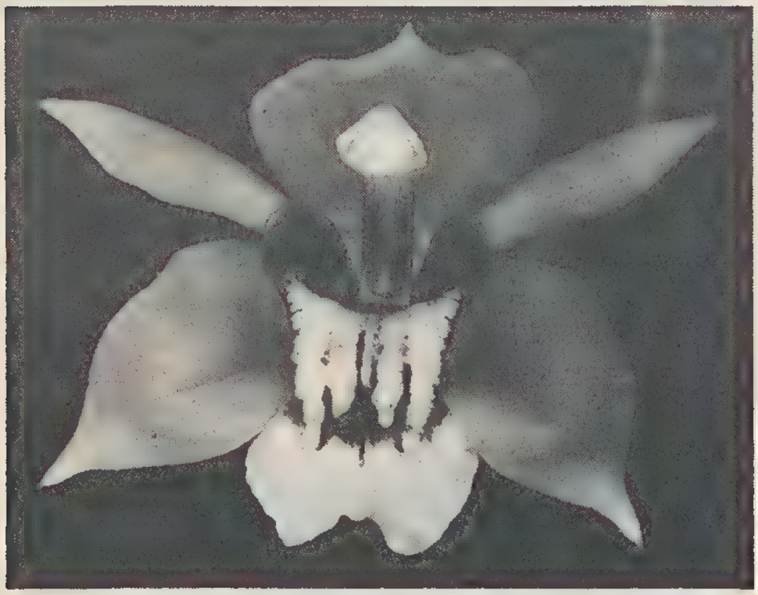

Fig. 3: *C. beccarii* Rchb.f.

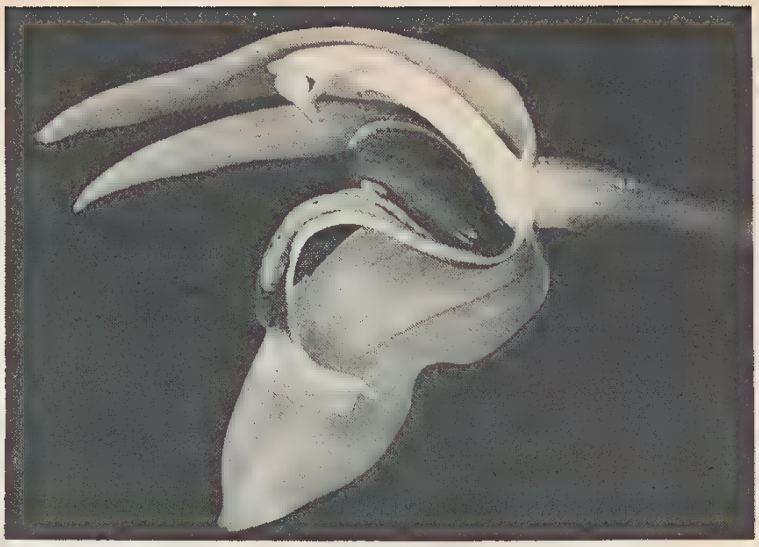

Fig. 4: *C. beccarii* (cross-section)

Coelogyne beccarii Rchb.f.

The flowers of *C. beccarii* are translucent off-white. The species can be easily recognised by the structure of the labellum, shown on these photographs. The colour of the lip varies from orange through brown to almost black. The frilly tip of the midlobe is always white and the surface of the sidelobes evenly dark. The thickened, raised blotches on the midlobe are sometimes evenly dark, or white as in the picture.

Flowering recorded in April, May and August to December.

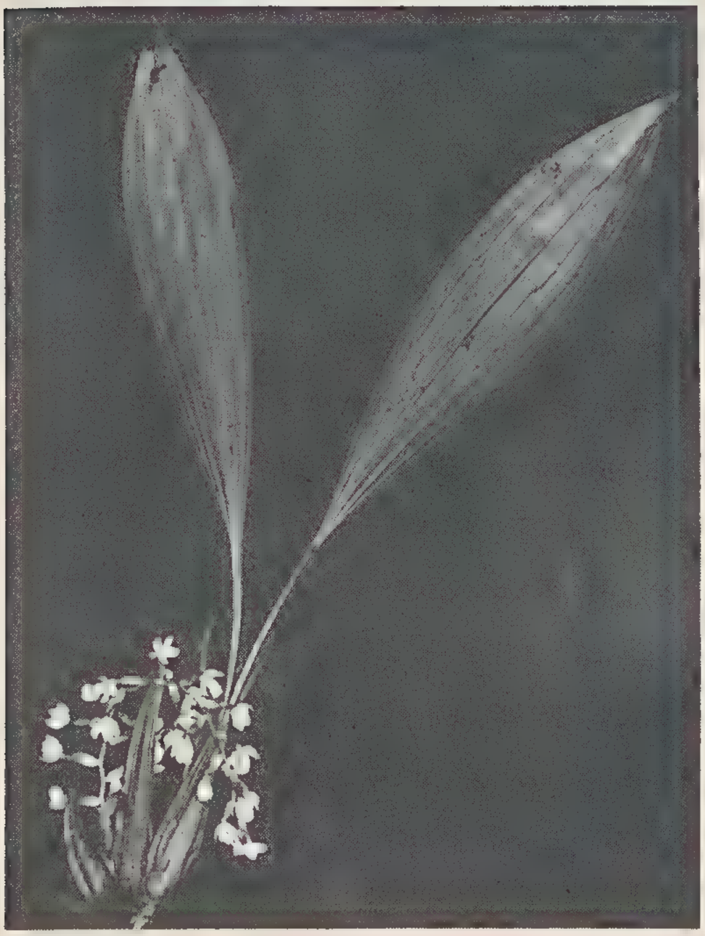

Fig. 5: *C. veitchii* Rolfe

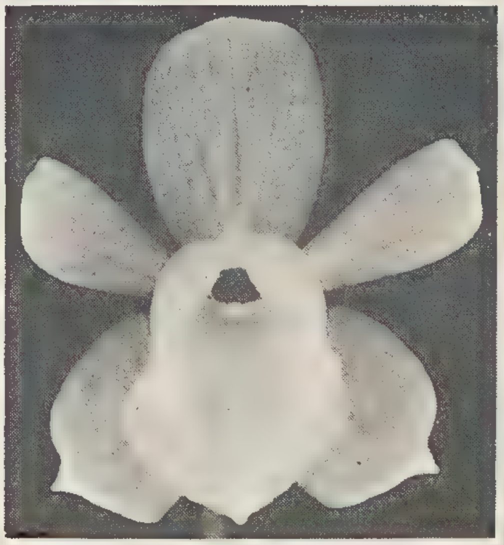

Fig. 6:

Coelogyne veitchii

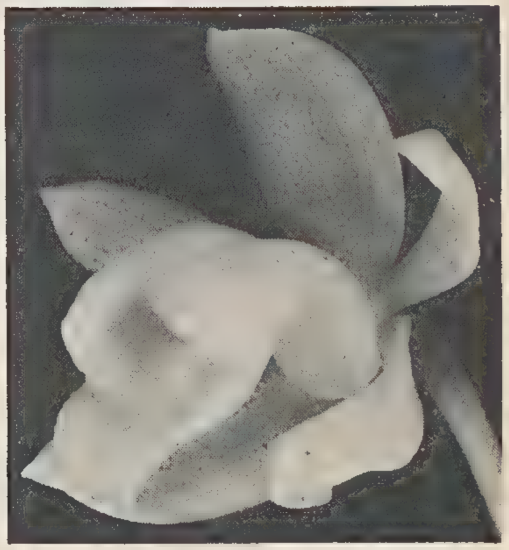

Fig. 7:

Coelogyne veitchii

Coelogyne veitchii Rolfe

The general appearance of the plant shown here is typical of all Coelogynes, this one was found in Karanka. Pseudobulbs of *C. veitchii* are green, floral parts white, anther reddish brown.

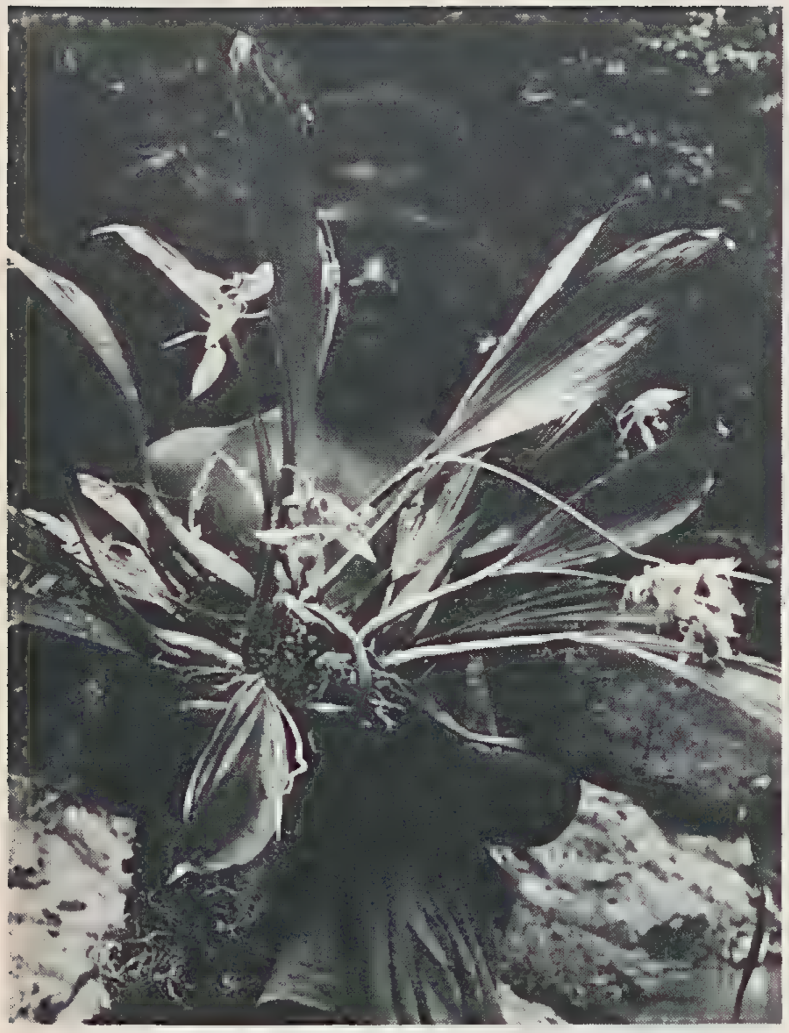

Fig. 8: *Coelogyne sp. CH-156* (plant)

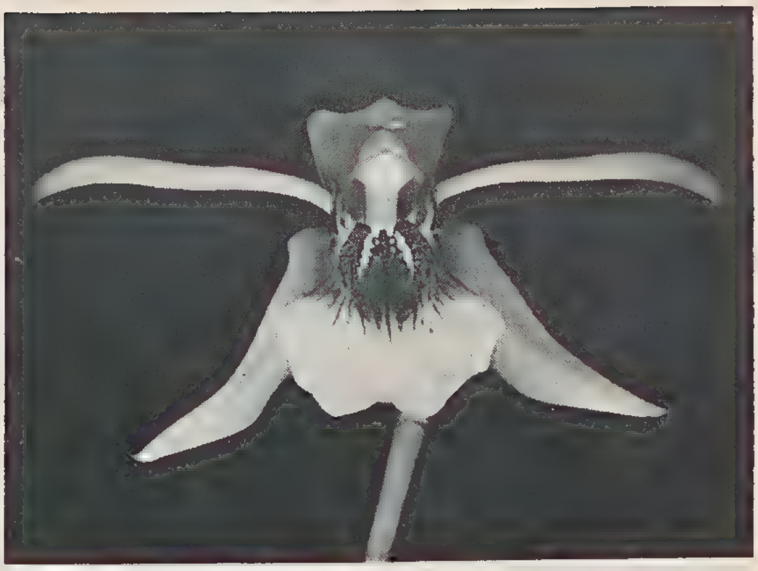

Fig. 9: *Coelogyne sp. CH-156* (flower)

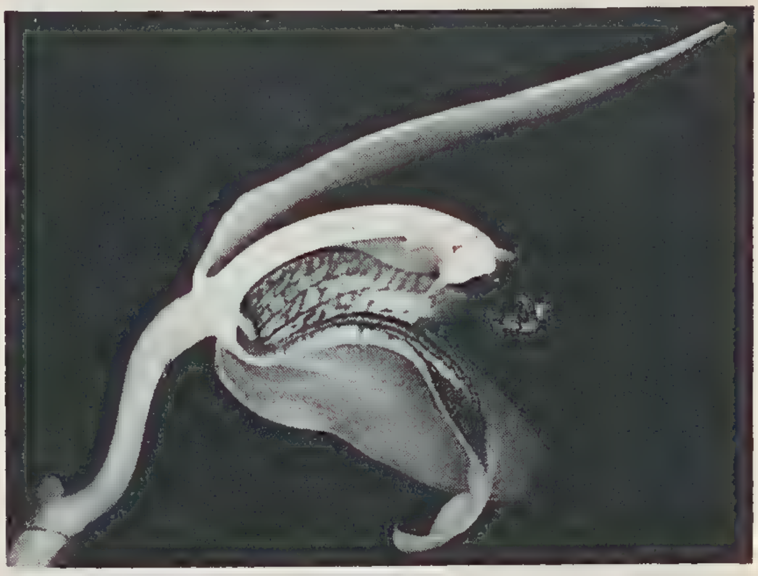

Fig. 10: *Coelogyne sp. CH-156* (cross section)

Coelogyne sp. CH-156

This is the species that for years was incorrectly identified as *C. fragrans*. The plant was collected near Wanton river at Karanka (6°21'S, 146°05'E, 1200m).

Sepals are elliptical, acute, dorsal 46mm long, 16mm wide, lateral 42mm long, 14mm wide. Petals linear, acute, 43mm long, 24mm wide across flattened elliptical sidelobes, which are 21mm long. Midlobe almost circular, 20mm long, 19mm wide, with an obtuse point, edges undulated.

Three prominent keels, the outside two 23mm long, wider than the middle one, which is about 14mm long. Column curved, hooded, 25mm long, widening from 3mm to 9mm.

Sepals pale cream, petals white with cream tips, labellum white with dark brown markings and ridges, column white suffused yellow towards tip with brown edge, anther white.

Live specimen sent to Kew, dried specimen sent to Lae, alcohol specimen to both.

The keels of the labellum may be quite variable, especially the wide lateral ones may have developed from two or three narrow ones. The photographs were taken for comparison with *C. beccarii* Rchb.f., the side view and cross-section of the flower shows how wide the upper part of the column is.

References:
R. Schlechter: Die Orchidaceen von Deutsch-Neu-Guinea, p. XXXIII, 101-105, Figuren Atlas Plates XXXIX – XXXXI.
E. Pfitzer, F. Kraenzlin: Das Pflanzenreich, Vol. 32, Coelogyninae.
A Millar: Orchids of Papua New Guinea, p. 74, 75

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8.11.1981

(Mr. Chadim will cover C. fragrans *in a special article next issue — Ed.)*

THE BASICS OF NATIVE ORCHID GROWING — 2

by Don Barnham

Having dealt with the rudimentary principles of orchid classification in PART 1 this series continues with more notes on the cold growing dendrobium alliance suited to the Sydney region of New South Wales.

But firstly, as different members of this family may require or prefer a potting medium of a special kind the following summary list of mixes and proportions will simplify description later when we deal with individual orchid species.

Summary of Various Grades of Medium Suitable for Dendrobiums

MIX D1 This is a coarse medium suitable for plants with thick root systems and consists of two parts of 12 to 20mm size aggregate, preferably sandstone or scoria, two parts of similar sized fir bark and three parts of compost.

MIX D2 This medium is similar to D1 but the aggregate is reduced to no more than 15mm size.

MIX D3 The aggregate in this mixture ranges from 6 to 12mm size and contains two parts fir bark, two parts charcoal and three parts compost.

MIX D4 This mixture is the same as that in D3 except that one part of German peatmoss is added to the medium. Peatmoss must be moistened before mixing with the other parts.

MIX D5 In this mixture the maximum size of the aggregate is 6mm, or that which will pass through a 6mm (¼") mesh size sieve, and consists of two parts of charcoal and one part of fir bark to which is added two parts of compost and one part of PERLITE P400 or P500 size.

MIX D6 To five parts each of 3 to 6mm (1/8" — ¼") size American fir bark and grade 3 charcoal add one part PERLITE size P400 and one part vermiculite. This mixture is suitable for orchid seedlings straight from the flask and when used as such it has been found advisable to soak the mix in R.D.O. FIELD PACK FERTILIZER at label strength for one hour before use. Also, a few drops of "FORMULA 20" in the soak water should assist in stimulating plant growth.

NOTE: The foregoing ingredients and proportions are set down only as a guide and may be varied to suit the individual grower's requirements.

Description of Terminology Used in the Foregoing Mixtures.

'AGGREGATE' This term used in the list refers to any suitable material that will not break down readily such as sandstone, scoria (also known as volcanic rock), charcoal, fir bark etc.

'COMPOST' This is any one of a number of fibrous vegetable based materials that is suitable for the purpose and is readily obtainable. Such material can be partly decayed hardwood shavings or chips, decaying tree leaves that may be gathered from about the base of large trees in the bush or in crevices between rocks, peanut shells, rice or oats hulls, or any similar material.

It is advisable to have a final compost mix containing a number of these items such as would be found in the "Cymbidium Compost" or "Orchid Compost" which is obtainable from plant nurserymen.

Your home-made compost could contain — two parts gum leaves, two parts wood shavings and one part hulls; but any mixture will do as long as it will not compact when wet. A good test for an orchid type compost is to take a handful of it, squeeze out any excess water and then, when released from the hand, the ball of compost should readily break apart. Cymbidium compost is in itself quite suitable to be used for growing dendrobiums, but always remove any large particles it may contain when it is being used for small or fine-rooted plants. The purpose of compost in the medium is to serve as a food source for the plant as well as a moisture retention agent.

It is to be noted that any material being used to make up a compost should firstly be sieved if there is any likelihood of it containing dust-like particles as such fines could wash through to the bottom of the pot and block up the drainage with dire results.

'MEDIUM' This term means the combined mixture of the aggregate and the compost and should vary in its structure to suit the varying nature of the different species of orchids for which it is being used. Any medium must be in a moist state when being used for potting.

It is as well to mention at this stage that in potting dendrobiums a rule of thumb to follow is that if the orchid to be potted has thick roots then the potting material should generally be of a coarse nature, and as the roots of various plants diminish in thickness so should the coarseness of the material diminish, thus grading down to a medium containing a base material of a gritty nature for plants with very thin roots.

In potting seedling orchids this rule should also apply, for as the plant outgrows its container and potting-on becomes necessary, in all probability the texture of the new medium will need to be upgraded to suit the expanding nature of the plant's root system.

Having established a working basis for potting dendrobiums we can now progress to dealing with the various species.

D. speciosum: There are several varieties of this orchid and those wishing to acquaint themselves with the details are advised to refer to *The Orchadian* vol. 6, nos. 11 and 12 where S.C. Clemesha has dealt with them and their locations in Australia.

All varieties of *D. speciosum* can be grown in cultivation in the same manner despite the fact that some tend to be classed as lithophytes while others are more inclined to be epiphytic. These plants will grow quite well in a pot, The pot must be fairly large and preferably made of terracotta or cement as the size and vigour of these orchids demands a container that will withstand both the force of its expanding new stem growth and the very weight of its solid contents if sandstone is to be used as the base material.

Before dealing with the actual potting procedure for this orchid it must be stressed that one should realize the extent to which some varieties can grow. It is not unusual for a plant to double its size in two years, so unless you are prepared to pot-on each year, the pot size should be large enough to allow for plenty of expansion; otherwise you will soon have a pot-bound plant on your hands and once this happens it is almost impossible to remove such a plant from its container without having to resort to the hammer, and with the price of pots increasing all the time deliberately smashing pots can be quite a costly business.

Generally speaking all varieties of *D. speciosum* are large growing plants with var. *pedunculatum* (formerly var. *compactum*) being the exception, as it is more daintily proportioned in its form and appears not to expand rapidly as the other varieties do.

In their natural habitat these orchids grow seemingly with very little available nourishment by way of compost; so it can be said that in cultivation the potting medium needs to be mostly aggregate with the compost being no more than 30% of the volume. Medium grade D1 is suited to *D. speciosum* except for var. *pedunculatum* when grade D2 would be more suitable. The procedure for potting a mature plant of *D. speciosum* is as follows: use a terracotta or cement pot for preference and one that is at least twice the diameter of the plant to be potted. It is advisable to use a deep pot to accommodate the extensive root system. Good drainage is essential; so the bottom quarter of the pot must consist of coarse material which can be 25mm size aggregate, preferably sandstone or scoria. Over this base material place a 30mm layer of medium and firm it down, then, having first reduced any roots of the plant to manageable lengths and having removed any dead or decaying parts, centre the plant in the pot with one hand while working more medium firmly into the pot and in between the roots with the other until about 20mm below the pot rim is reached. Do not bury the plant deeply in the medium, aim to finish with the base of the canes level with the top of the medium or just below. Finish off the potting process by gently tapping the pot on a firm surface to settle its contents; then place it in a shady position for a few weeks. It is advisable to withhold watering for a week or two providing the weather is not too hot as the moisture in the medium should be sufficient to carry the plant over this period. The object at this stage is to induce new root growth before excessive watering is undertaken. Once new root growth is noticed watering can be increased to normal and the plant moved into stronger light.

It is as well to mention at this stage that *D. speciosum* will grow quite well in heavy shade but it will not flower successfully under those conditions. It must have good light, particularly in the autumn and winter seasons to induce the spring flowering.

As a general rule the best time to divide or repot an orchid is the period at, or shortly after, flowering. It is then that the plant is approaching a rest phase and can stand the shock of disturbance more readily.

The foregoing method of potting is **Standard Procedure** for dendrobiums and will not be referred to again in this series unless variations occur that require special mention.

D. gracilicaule var. gracilicaule:

This species was once very plentiful and commonly grown in orchid collections but it would appear that with the present-day availability of other and more desirable orchids it has been rather neglected in recent years. This is a pity because when grown into a well-cared for specimen plant it can be very attractive when in full flower. Such a plant won Champion Specimen Native Species Orchid at the 1980 A.N.O.S. Spring Show at Mona Vale.

In its native habitat *D. gracilicaule* is sometimes lithophytic but more commonly epiphytic on trees in semi-rainforest areas, often at a high altitude — which indicates it will tolerate rather cool conditions.

In cultivation this orchid is best grown in a deep terracotta pot with D3 type medium. It has a fairly fine root system which will easily rot if the drainage is not perfect and if it is over-watered, particularly in the colder months of the year. It will also grow quite well on a hardwood slab hung where its roots are not subject to direct sun. So the ideal for slab culture would be for the top part of the plant to be able to receive good light but not much full sun while its root system is protected with moderately heavy shade.

D. gracilicaule var. howeanum:

This variety is a plant of more robust habit and a later flowerer than variety *gracilicaule*. It is best suited to pot culture with D3 type medium being used. It will also grow quite well on a large piece of tree-fern fibre providing it is not allowed to get too hot, for its natural habitat on Lord Howe Island indicates it would be suited to temperate growing conditions.

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ROGERS ON SCHLECHTER

by J.T. Simmons

One of the most prominent orchidologists on the Australian scene in the early decades of this century was Richard Sanders Rogers M.A., M.D., D.Sc., F.L.S.

He is probably best known for his work on the 'Orchidaceae' section in *Black's Flora of South Australia (1922)* but when he died in 1942 he had written numerous papers and articles which were published over the years in Transactions of the various Royal Societies, the Linnean Society, Victorian Naturalist and similar journals, not always readily available to the general reader.

His personal library including a number of priceless 19th Century books and papers on Orchids was left as a bequest to the University of Adleaide and is at present held in the Special Collections Section of the Barr-Smith Library. Several years ago his bequest was found to contain a number of personal handwritten journals and minute books which included English translation notes of much of Rudolf Schlechter's more important works. There is evidence that Rogers corresponded regularly with both Schlechter and J.J. Smith but unfortunately no trace can be found of this correspondence, either at the Barr-Smith Library, or the Library of the Adelaide Botanic Gardens.

The concept for the publication of an English translation of Schlechter's *Die Orchidaceen von Deutsch-Neu-Guinea (The Orchidaceae of German New Guinea)* was inspired by the notes of Rogers which had amounted to a translation of about two-thirds of the German text in the form of personal working notes.

The completion of the translation and upgrading of his text to publication standard has been undertaken by a small group of Australian Orchid Foundation Members under the Editorship of Don Blaxell, Assistant Director, Royal Botanic Gardens, Sydney. The culmination of their three years of work may be seen in the publication of this book as an A.O.F. project. Included with the English translation of this volume will be Schlechter's *Figuren — Atlas der Orchidaceen von Deutsch-Neu-Guinea,* which was originally published as a separate volume of botanical drawings some 12 years after the German text.

Perhaps a lesser known work of Schlechter's which is under consideration for future publication is *Neue Orchidaceen Papuasiens* which was originally published in *Engl. Bot. Jahrb. vol. 58 (1922-23)* pp. 50-157, as part of C. Lauterbach's 'Beitrage zur Flora von Papuasien IX' (Contributions to the Flora of Papuasia (IX). This volume describes a further 128 species or varieties of 27 genera, mainly collected by C. Ledermann in 1912-13 during the German-Dutch Boundary Expedition in the Sepik River area of German New Guinea. Smaller collections made in 1910 by Schultze, Moszowski and Peekel are also included and to a degree this work constitutes a supplement to *Die Orchidaceen von Deutsch Neu Guinea.* Again, this work is inspired by a partial translation contained in the 'Minute Books' of Dr Rogers.

When Schlechter concluded his first journey to German New Guinea in August 1902 he proceeded to Sydney and after a brief visit embarked for New Caledonia, arriving in Noumea in September of the same year. During the ensuing five months he made a collection of over 1,000 plants for the Berlin Botanical Museum which, in the interests of expanding its collection of New Caledonian material had funded Schlechter's visit. The collection included 139 specimens of Orchidaceae covering 105 species or varieties of 44 genera. Not less than 68 species or varieties were new and three new genera were described.

Schlechter took his Ph.D. in 1904 and he used as his thesis the first part of his work 'Pflanzengeographische Gliederung der insel Neu-Kaledonien' (Plant Geography of the Island of New Caledonia).

The complete work was published in *Engl. Bot. Jahrb. vol. 39 (1906)* pp. 1-274 as 'Beitrage zur Kenntnis der Flora von Neu-Kaledonien' (Contributions to the Knowledge of the Flora of New Caledonia). The Orchidaceae section (pp. 33-91), contained in Rogers's Minute Books is a partial English translation and will constitute either a long paper or a small volume which is also under consideration by the Australian Orchid Foundation for future publication.

Unfortunately, with both the latter works, the Type specimens held at the Berlin Botanical Museum were lost in the bombing of Berlin in 1943 and to date it has been difficult to trace any published illustrations Schlechter may have made of this material. However, isotypes are known to exist in a number of herbaria and it may prove possible to obtain illustrations from these sources.

Other translation work by Rogers includes a major portion of Schlechter's classic work *Die Orchideen, ihre Beschreibung, Kultur und Zuchtung* (The Orchids, their Description, Culture and System of Propagation) published in 1915 and a most important paper written by Schlechter in 1921 but published ('Opera postuma' i.e. his last work) in 1926 — 'Das System der Orchidaceen' (Classification of the Orchidaceae). Schlechter's system of classification of Orchidaceae is still used by many herbariums throughout the world.

It is appropriate that we pay tribute to Rogers for these unpublished works, dormant for nearly 40 years, and to the A.O.F. for its enterprise in fulfilling yet another of its objectives.

References

Loesener, Th. (1926) Rudolf Schlechter Leben und Wirken. — Notizbl. Bot. Gart., Berlin, 912-158.

Frodin, D.G. (1975) Rudolf Schlechter: His Life and Travels — Science in New Guinea 3(2), 73-82.

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January 15, 1982

DENDROBIUM TETRAGONUM AND PARTNERS

A few thoughts on the hybrids of *D. tetragonum*

by Ted Gregory

As I was writing that last article on *D. tetragonum I was tempted to toss in a late paragraph or two on its hybrids but when I thought again I realised that it would have to be "some paragraph" even to scratch the subject. So I decided to try my hand on these hybrids, as a separate issue.**

As this list unfolds it seems to me to strengthen the view that I put forward in that previous article about *D. tetragonum* being a sort of half-way house among the different branches of the Australian family of dendrobiums by reason of the relative ease with which it will cross with the other branches.

When I sat down to write this I had a quick look through our "Checklist of Australian Native Orchid Hybrids" and noticed that there are no recordings of naturally occurring hybrids of *D. tetragonum*, which seems to put a bit of a damper on the preceding paragraph. One of the great tragedies of the orchid lore of this country is the fact that so much of our bush has been wiped out by people who did not know or care what they were doing before it was even fully explored botanically. So we will never fully know exactly what grew, or where. As I have stated before, I have a good knowledge of the bush and its flora and fauna in the Hastings-Manning Rivers area, but by the very nature of my occupation I never became familiar with any other area of our land to any extent. And this area is just a dot on the map, figuratively speaking, as far as the orchids of Australia are concerned. Yet I have seen enough to make me realise that in many ways so much of our bush still has not been explored and documented properly.

Dendrobium x suffusum is a typical example of this. When it was discovered and named a few years ago it was regarded as being an extremely rare orchid; yet over recent years many clones of it have been found in my old area, just by careful exploration of habitats where both parents are fairly common and the areas are not too handy for bush strippers to have had their way.

On top of all this is the fact that many farmers of the last generation ot two had a great love of orchids and were also great growers of orchids. Many of these old hands had a wonderful variety of plants and were rather loath to pass on much information about these, as they had seen strippers in action once word of anything special got around. In an area where both parents are common, it is quite reasonable to assume that quite a few of these hybrids did occur and were collected years back and grown in these old collections. I have seen three natural D. Ellens and one D. Bardo Rose from my old area, so goodness knows how many would have occurred over the east coast of Australia if one had only had the time to get to know more of the country. It may seem empty to make statements like this and not give names and such, but these people are all good friends who have treated me well and value their anonymity and I must respect them for it.

Having said this bit on the natural D. Ellen, I will now get back to where I started. I think D. Ellen would be as good as any to start with; as Ellen must be one of the oldest and most popular of the man-made *tetragonum* hybrids, being registered by Schmidt in 1928. This combination of *D. kingianum* and *D. tetragonum* has produced an endless variety of plants since then, most of them being very free-flowering and of pleasing habit. Some also have the desirable feature of flowering in the autumn and winter; which is one of the main objectives of crossing — to have native orchids that will flower at all times of the year. We are finding that *D. tetragonum* is one of the most useful parents in this regard.

D. Ellen is a typical hybrid, showing roughly half of each parent's characteristics. Some lean to *D. tetragonum* and are rather spidery. Some have quite large flowers of up to 40mm and are very flat with beautifully marked and displayed labellums. Colour can be from typical tetragonum-brown through to an endless array of combinations of pink and white with an odd "albino" thrown in for good measure. Some crosses have been very robust growers with good upright growth with just a touch of that square tetragonum cane showing. Others have been rather weedy, depending on the parents used I guess. But they almost all have that free flowering habit that we are looking for.

D. Star of Gold is the next one to come to mind, and this must surely be one of the most admired and desired of our native hybrids to date. This cross of *D. falcorostrum* and *D. tetragonum* produced the first of our golden star-shaped flowers, almost all being large golden tetragonum-type flowers with a trace of falcorostrum showing in the labellum. Flowers 75mm in depth are average and this cross also has that habit of being able to flower at any time of the year. The flowers favour *D. tetragonum* almost completely; but the plants look like true hybrids, being mainly tall and looking like a tall *D. falcorostrum* with *D. tetragonum* leaves on top. I don't know whether I have just been unlucky or not, but my Star of Gold plants have never been really vigorous growers. With the number of crosses being made today that are producing such star-shaped flowers, it is getting to the stage where one has to rely on the honesty of the breeder as to the exact parentage.

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* See *The Orchadian*, Sept. 1981

Another *D. tetragonum* cross (with *D. bigibbum*) which comes to mind unfortunately trades under two names. In the old days before *D. bigibbum* was recognised as the correct name for *D. phalaenopsis* it was D. Suzanne, but now it is called D. Pee Wee*. This is a very typical case of different parent: different result. The plants of the Suzanne cross that I have seen are that usual hybrid growth in both plant habit and flowers, and are tidy, upright growers, whereas most of the Pee Wee I have had anything to do with have favoured *D. tetragonum* in growth habit and have been inclined to grow horizontally, which can be rather a problem in the bush house. The flowers are down-the-middle hybrid to look at, but *D. bigibbum* has completely dominated the colour, with almost all the offspring being bigibbum-purple except for a few which are pink and white in the bi-colour habit. Flowers are up to almost 100mm wide and long-lasting. They flower in the autumn.

D. Pee Wee was made with one objective being a cooler growing hardcane type flower; but I don't know if this worked out, as mine seem to be no more cold-tolerant than straight *D. bigibbum*. We have crossed D. Pee Wee back on to *D. tetragonum* var. *giganteum* and will have to wait another year to see what the flowers will be like. The plants are growing well in a cool house.

D. Willowie Gold is another cross in this group. This time *D. discolor* is the other parent. Unlike D. Pee Wee it grows cold fairly well for me and seems to flower all the year round. Again we have typical hybrid habit; large hefty plants — half *D. tetragonum* and half *D. discolor* and the flowers are on discolor spikes that look like large tetragonums doing the twist. Colour is usually typical discolor-gold and the flowers last very well. When *D. kingianum* was crossed with Willowie Gold a few excellent progeny resulted, with big meaty flowers of good texture, some nice browns and one beautiful apple green. I have run into problems going any further here. I can get tremendous pods but no viable seed as yet.

Perhaps the most popular *D. tetragonum* cross to date is *D. speciosum x tetragonum*, known now as **D. Hilda Poxon.** This was one of Ira Butler's crosses and I would have liked to see him live to carry on with it. This is one cross that inherited the best characteristics of both parents: plants are big and sturdy and the flowers are tetragonum-size on speciosum spikes. What more could one ask than that? Flowers are similar in size and shape to D. Star of Gold, but vary greatly in colouration. Some favour *D. speciosum* in colour (a beautiful light yellow) and a few are almost apple-green; some with nicely contrasted labellums. Others favour *D. tetragonum* and are heavily speckled ranging from yellow with red blotching through to deep brown blotching. This cross also has the ability to flower at any old time of the year which adds further to its desirability. We crossed D. Hilda Poxon with D. Hastings in the hope of getting a good second generation hybrid going. The seedlings grew very well for the first couple of seasons, but since have "hung fire", in fact over the last twelve months a few of them seem to be advancing to the rear. However, a few that have flowered are definitely promising. One has flowered twice and had over thirty flowers on board this spring. Similar to D. Hilda Poxon, but slightly smaller, it is a delightful apple-green with a vivid red labellum. Another had only a couple of flowers, just like the big pink D. Hastings. Whether it will carry more flowers as the plant matures, who knows? The joys of monkeying with nature!!

The next cross we mention again shows the massive dominance of *D. tetragonum* in the flower habit of the progeny. *D. X delicatum* was mated with *D. tetragonum* to produce the elegant **D. Ku-ring-gai**, a clone of which has the honour of being awarded (still a rather rare occurrence in this country). I think the stage has just about been reached where awards will become less rare as people are beginning to appreciate our natives more. As more learn to grow them properly there will be a great increase in the number of clones being presented for awards.

Getting back to D. Ku-ring-gai, most of the seedlings of this cross have grown into sturdy plants, rather compact with the canes rather fusiform on some; rather like a sturdy D. Ellen. This cross has a flower quite similar to D. Hilda Poxon except for one outstanding difference: quite a few of the D. Ku-ring-gai clones have a labellum so heavily blotched in deep mauve as to look almost completely mauve. Some plants of *D. X delicatum* have labellums heavily marked in mauve or purple and the bonus in this cross has been in this enriching of lip markings. But there is the exception in every cross, as I have seen a concolor yellow Ku-ring-gai as well. Seeing this clone makes me realise just how much the mauve lip is the outstanding feature of this cross.

D. Ku-ring-gai differs from D. Hilda Poxon in having rather short flower scapes. Three to five seems average against thirty or more that occur on a well-grown "Hilda". But Ku-ring-gai compensates by having a lot of scapes, most of which display themselves very well. This could result from the fact that a lot of tetragonums that have been used may have had very large flowers, but did they have many of them? It will be interesting to see some of these crosses remade with some of the multi-flowering clones that carry 30 or more flowers per head.

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* For the reason, see the Introduction to "A Checklist of Australian Native Orchid Hybrids" (publ. ANOS, 1981)

Another of the newer *D. tetragonum* hybrids is **D. Blushing Star**, which is created by using *D. X suffusum* as the other parent. Here again we have the dominance of *D. tetragonum*. About the only trace of *D. X suffusum* is in the colouration, as this cross gives us pinks. In fact, the result is very much a pink Hilda Poxon type flower, even in size; which is amazing considering the size of the average *D. x suffusum.*

All the above crosses I have known fairly well, but this next one I am afraid I know only by name. This is rather incredible as I lived not very far from Noel Jupp for many years but was never at his place at the right time to see one of them in flower. Of course the hybrid I speak of is his **D. Allyn Star**, which is the result of the mating of *D. X gracillimum* and *D. tetragonum. D. X gracillimum* has always been one of my favourite orchids and I am sure the progeny must have produced some winners.

This, I guess, has been just a short list of *D. tetragonum* and its partners in the hybridising business over the last 50 years in this country. I should think it will have been infinitesimal compared with what will go on over the next 50 years. I am tempted to ask the following question: Where do we go from here?

After seeing what has gone on around the world in the breeding of cymbidiums, cattleyas and so on, it seems to me that we should be doing more towards conserving our species and improving them by breeding with selected clones and generally just strengthening these species. As we all know nature is never still and evolution is a continuing, ever-changing force which we seem to be doing our best to destroy. As we have so broken up the habitats of most of our orchids their evolution is now in our hands to a certain extent, and is going to fall by the wayside if we don't help out.

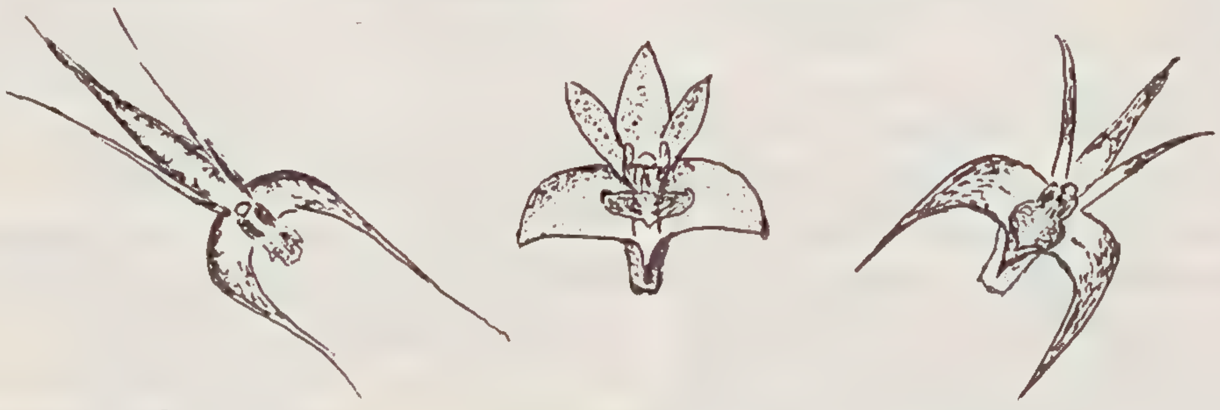
The only fly in the buttermilk in improving species is the fact that it is a slower business than hybridising, as the straight species naturally lack hybrid vigour, and normally take at least a year longer to flower – in the case of *D. speciosum*, many years.

D. speciosum has always been one of my weaknesses and I think the only way its riddles and variations will ever be finally sorted out is for the different varieties to be "selfed", crossed and grown in quantity to flowering **in properly documented collections.** Here again we are already in trouble, as goodness knows how many of the better clones of our species have already been wiped out. Liaison and exchange of information will be necessary to bring to fruition any programme of any magnitude; but surely this is not a great problem in this electronic age.

Before closing this article I must include a few words on *The Orchadian* and its material content, its aims and so on if you will bear with me for another moment or two. As a member who has read every issue of *The Orchadian* since its inception I cannot help but wonder how the journal has improved over the last few years. By saying that I am not trying to denigrate the old magazine, old editors, or contributors. Nothing is further from my mind. I have seen *The Orchadian* grow from a foolscap sheet to a world class magazine. Among its aims is **exchange of information.** I must join with the Editor in calling for much more constructive activity from everyone concerned with our magazine. **Constructive articles, advice and criticism** are needed badly; true criticism is never destructive but often taken as such; destructive material of any sort we can do without.

By its very nature, *The Orchadian* must always have a large proportion of taxonomic articles, for these are its very life-blood and reason for existence. There is also scope for general articles like mine (I hope!), but there has to be a happy marriage of the two and this can only come about by tolerance and a good supply of both.

124 Oxenford Road,
January 20, 1982 **Mt Tamborine,**
QLD. 4272



D. tetragonum x *D. kingianum* = D. ELLEN

Drawing J.J. Betts

THE IRA BUTLER AWARD

The IRA BUTLER NATIVE ORCHID HYBRID of the YEAR has been awarded to a fine plant of Dendrobium 'Gloucester Sands' which was submitted by the Central Coast Group of the Australasian Native Orchid Society (ANOS).

This orchid was chosen from numerous entries submitted by the State Societies and by ANOS Groups throughout Australia.

The judges commented on the high standard of the plants submitted for the award.

The Ira Butler Committee congratulates the owner of the plant, Mr Laurie Jarvis of the Central Coast Group of ANOS.

In 1982 the committee has decided to include the champion native orchid hybrid of the State Societies' and the ANOS Groups' Winter as well as Spring shows in selecting the Ira Butler Champion Native Orchid Hybrid of the Year.

The Champion Native Orchid Hybrid of the respective State Society or ANOS Group show will receive an Ira Butler trophy and from the winners of these will be selected the Ira Butler Native Orchid Hybrid of the Year.

To participate in the award it is essential that the following details be forwarded by the State Society or ANOS Group to the chairman of the award committee Mr John Stuart of 45 Tryon Road, Lindfield 2070.

1. Three colour transparencies (not prints) of the entry showing:
    - a. flowers, front view
    - b. flowers, side view
    - c. whole plant
2. a. name and address of winner
    - b. name of plant
3. size measurements of the individual flowers to assist the judges in arriving at a decision.
4. **the hybrid need not have been created by the owner.**
5. The committee's judging decision is final and no correspondence will be entered into on the decision.
6. All entries should be addressed to the Chairman of the committee

John Stuart
45 Tryon Road,
Lindfield 2070

SEVENTH AUSTRALIAN ORCHID CONFERENCE

This will be held from 23rd to 29th September, 1982 at the Greek Community Centre, 29-31 Edmondstone Street, South Brisbane, Queensland.

Registration fees paid before 30 April are $40.00 each. Later the fee will be $45.00.

Details of functions, lectures, proceedings, entertainments, accommodation arrangements, private billeting and tours (every day and post-Conference) may be had by contacting:

Tania Tinney — Phone: (07) 36 0679

who will post a brochure to you.

Remember: the Commonwealth Games period is from 1st October; so accommodation bookings could be difficult.

THE HASTINGS VALLEY ANOS GROUP

reports that the following Office Bearers were elected at the Annual General Meeting held on 27/11/81:

President: Lex Barton
Box 339, Wauchope
Vice-President: Mrs Meg Potts
Secretary: Mrs Norma Blanch
R.M.B. 60, Pappinbarra Road,
Beechwood, 2446.

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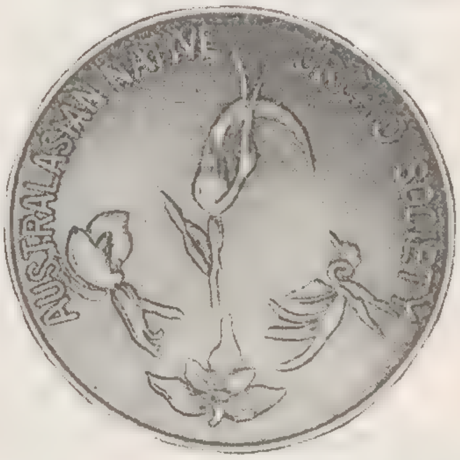

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THE AUSTRALIAN ORCHID FOUNDATION

The Orchid Species Seed Bank

The Directors of the Foundation would be grateful if you would bring to the attention of your Members, through your Bulletin or by any other means, that the Orchid Species Seed Bank has a wide range of genera/species to offer. However, there is a continuing need for fresh supplies, both from our Australian species and from the Exotic Orchid Species.

The Foundation's orchid species seed bank has been in operation for several years now, with, we consider, great benefit to the conservation of orchid species and to orchid growers generally.

The Foundation has found that there is a very strong demand overseas for our native orchids which we have not been able to publicize, because of the fear that existing stocks and the variety of orchid seed would be insufficient to meet the expected demand.

Seed from the Exotic Orchid Species is in strong demand within Australia, particularly the rarer species and many that are seen regularly on the Show Benches at Meetings.

The purpose of this approach is to make an appeal to your *Members to assist the AOF Orchid Species Seed Bank.* **We ask that you give this important matter in your Newsletters and regular reminders to appear from time to time.**

Perhaps a Member of your Committee could be appointed to encourage Members in this task, because seed cannot occur overnight, and requires planning ahead to make selfings of these species as they flower. Hybrids are NOT required.

There are many Paphiopedilum species grown in Australia, yet the Orchid Species Seed Bank has not been able to attract any seed of this genus. Almost the same could be mentioned of the Cattleya, Laelia, Oncidium, Dendrobium etc., species.

The Foundation has created this segment in the name of 'Practical Orchid Conservation' and wish to appeal to all orchid growers to assist in this unique operative function.

Seed or green pods, should be wrapped in clean paper (never plastic material) and sent to the Curator of the Orchid Species Seed Bank . . . address below.

The information required is the name of the species, name of the collector, date of collection. Any other information relative to the species will be welcome.

Any Member of your Society who is desirous of seed, may obtain an up-to-date list of Orchid Species Seed being held. The charge is $1.00 for the first sample, and 50c for any other. Every possible effort is made to ensure fresh seed, correctly labelled; although understandably, no guarantee in this regard is possible.

The AOF Orchid Species Seed Bank was created to serve a need and not for profit, but happily this service has become self-supporting, and any surplus funds have been channelled into the operation of the Australian Orchid Foundation to benefit ORCHIDS in Australia. Any positive assistance your Society and its Members can offer the Foundation's effort will be greatly appreciated.

The Curator is:
Graeme S. Banks
183 Windsor Road
Northmead NSW 2152.

Sincerely,
Gerald McCraith
Director.

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The Foundation advises that the following publications are available. All prices include postage within Australia:

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Proceedings of the Orchid Symposium Held in conjunction with the 13th International Botanical Congress in Sydney 1981 (Published by Orchid Society of N.S.W. — Ed.: L. Lawler and R.D. Kerr.)	131 pages	$11.00

The publication by the Foundation of an English translation of the monumental and basic work of Schlechter's "Orchidaceae of German New Guinea" is expected to be available shortly.

Further advice and a special offer will be made in the near future.

Please apply to : Australian Orchid Foundation,
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A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

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- *Sydney Group:* Tel.: (02) 53 5956
  Meets 8 p.m. 2nd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099
  Meets 8 p.m. 2nd Thursday, Stony Range Flora Reserve, Pittwater Road, Dee Why.
- *Newcastle Group:* Tel.: 48 9109 — Meets 4th Wednesday, John Young Community Hall, Thomas Street, Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- *Hastings Valley Group:* Tel.: (065) 85 6150 — Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Wauchope.
- *Central Coast Group:* Tel.: Secretary (043) 88 1785
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- *Far North Coast Group:* Tel.: 87 1036
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- *Victorian Group:* Tel.: (03) 754 6585
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

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- *Darling Downs Group:* Secretary: Mrs J. Leyden, 66 Mort Street, Toowoomba, 4350. Tel.: (076) 34 2813.
  Meets 7.30 p.m. 3rd Friday at the Auditorium of the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- *Native Orchid Society of Queensland (Affiliated):* c/- P.O. Box 159, Broadway, Qld. 4000.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

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- *Native Orchid Society of South Australia (Affiliated):* Secretary: E.R. Hargraeves, 1 Halmon Avenue, Everard Park, 5035 Tel.: (08) 293 2471 or 297 3724 — Meets 4th Tuesday, St.Matthew's Hall, 67 Bridge St., Kensington.

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- *W.A. Native Orchid Study and Conservation Group (Inc.) (Affiliated):* Tel.: (09) 337 9614
  Meets 3rd Wednesday at the Department of Agriculture's Film Room, Jarrah Road, South Perth.

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- *The Orchid Society of the Northern Territory (Affiliated):* Secretary: Mrs G. Heinemann, Tel.: 85 4624,
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The Orchadian

Volume 7, No. 4

June, 1982

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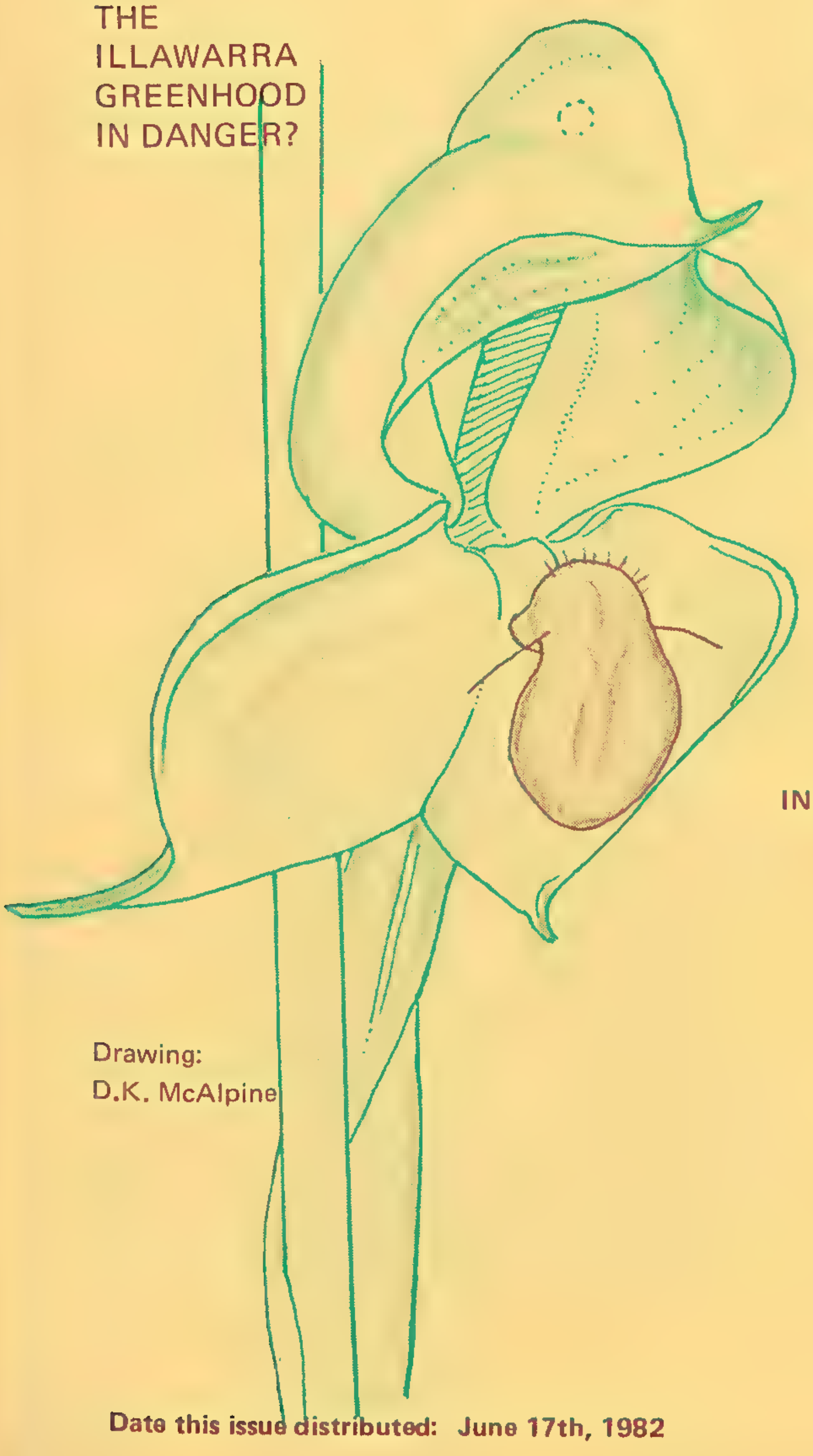
Pterostylis ceriflora (x 4)

THE ILLAWARRA GREENHOOD IN DANGER?



Drawing:
D.K. McAlpine

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EDITORIAL

Those readers who appreciate the larger typeface we have been using wherever possible in Volume 7 will be disappointed to find that this issue has reverted to the smaller (8 point) size typesetting — which, of course, makes proof reading more difficult too. The reason? A glance at the "In Store" list on the front cover will give a clue. The articles on hand (on botanical and taxonomic matters as well as some cultivation papers) show an accumulation of important and very interesting material. And much of this is, in a sense, urgent (in so far as things can become urgent in our dual fields of science and cultivation technology). Hence we are driven to "cramming" our presentation of the material by using smaller type. *Multum in parvo* — "A great deal in a small space" — has always been the nature of *The Orchadian*. Why not use more pages or more issues? You've guessed it. Money (and its inflation) is the problem. You will read, elsewhere, what ANOS is doing about this. Our plans for the future do not envisage a reduction in quality but rather expansion and improvement. Triumph over adveristy — to use a cliche — is our aim. All we need is more money, more members and plenty of encouragement for the new ideas that are coming thick and fast from the present management.

From the Editor's point of view we are in fine shape; there is no shortage of good material for publication; but I do not want contributors to slacken off or hold back on that account. I can **never** have too much on hand. Nor can the Hon. Secretary-Treasurer! **Your** main aim, as members, must be to get his field in fine shape, too, by mailing your subscriptions early.

In this issue of *The Orchadian* one of the more pleasant problems to solve was the selection of a suitable design for the front cover. At first I thought the obvious choice would be one of the ten illustrations from the article by Ron Heberle on the Caladenia species and hybrids of Western Australia — *C. lobata* for example. Then I looked again at the dedication on our cover: "To the study and **care** of Australasian indigenous orchids". This is really an extreme abbreviation of the "Objectives" expressed in the Constitution of ANOS. Clause 1 (ii) is more explicit: "To assist in the preservation of native orchids in their natural habitat and to discourage the wanton destruction of same". In short, "care" includes Conservation. I reflected that although ANOS Council is very much concerned about the need for conservation it cannot be regarded as being among the more active conservationist bodies that attract publicity these days. To succeed with conservation of wild native orchids is not easy. Perhaps we have been inclined to put it in the "Too Hard Basket"? Anyway we have never featured it on the front cover. So I decided in favour of David McAlpine's drawing of *Pterostylis ceriflora* for the June cover design. Let us hope that it will assist in the preservation of this species without attracting the wrong kind of attention — from wanton "collectors". This orchid, by the way, is the emblem of the Wollongong and District Native Orchid Society as I discovered when I was presented with their very attractive lapel badge at the April meeting.

FEEDBACK AND FOLLOW-UP

- **Schlechter.** We have no precise information as yet, on the date of publication by the A.O.F. of its English translation of Rudolf Schlechter's *"Orchidaceae of German New Guinea"*; but I had an opportunity to see some of the work-in-progress at the end of May when I had a visit from Jim Simmons. The enormous task (translation, editing and indexing) is now in its final stages. Jim was able to show me the proof-reading material for about half the total work. From this it was apparent that great care has been taken to render the translation into good, free-flowing English; to annotate the text where necessary with brief but soundly based botanical comment; to intersperse Achlechter's drawings from the *Figuren-Atlas* at appropriate intervals in the text; and finally to index the work in its new format. I do not like to use words like "enormous" in *The Orchadian*, but I must do so in this context not only about Schlechter's work, but also about the A.O.F. translators and editors — not forgetting Dr R.S. Rogers who started it all. My guess at a publication date is: towards the end of 1982.
- **Letters to the Editor.** Limited space is still the problem; but please keep them coming.
- **The questionnaire-survey.** The response from members was abnormally high and the Hon. Secretary has informed ANOS Council that a valuable set of conclusions will be the result. The analysis is not yet complete. When it has been studied by Council we hope to have a report ready for the Annual General Meeting in August (see Notice at p. 94).
- **A Question Box?** I am considering the possibility of publishing a question-and-answer section dealing with readers' problems in growing native orchids. If you have any views, for or against, please let me know. If you are in favour perhaps you will include a sample question or two. If you are an expert perhaps you would be willing to join a panel of experts to solve the problems?

SAVING THE ILLAWARRA GREENHOOD

by David K. McAlpine

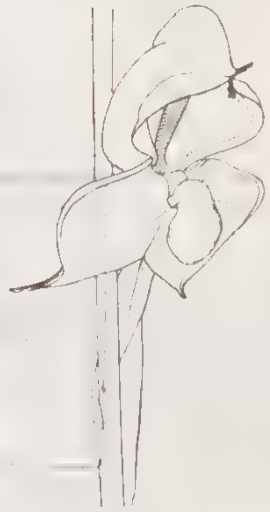
Pterostylis ceriflora, one of the most recently discovered orchid species of New South Wales, may be dubbed the Illawarra greenhood, as it is apparently the only greenhood or *Pterostylis* restricted to the Illawarra District and its habitat is not far from Lake Illawarra. Found in 1967 by Brian Whitehead of Dapto, it was named and described for the first time by J.A.P. Blackmore and S.C. Clemesha (*Orchadian 2(12): 156-158, 1968)*. As far as I am aware, only one plant was ever found away from the original habitat. This was found by Mr Whitehead in the Nowra district on land that has since come under cultivation.

With such a limited habitat, it was a cause of great concern to hear at the beginning of 1981 that the land with the greenhoods was up for sale, and was likely to be turned into cattle yards. Approaches were made to the New South Wales National Parks and Wildlife Service to see if the land could be secured as a nature reserve. Unfortunately, the value of the land was high and the Service's funds were fully committed for other worthy projects. The Heritage Council of New South Wales has recently used its powers to place a preservation order and a holding order on the property for two years.

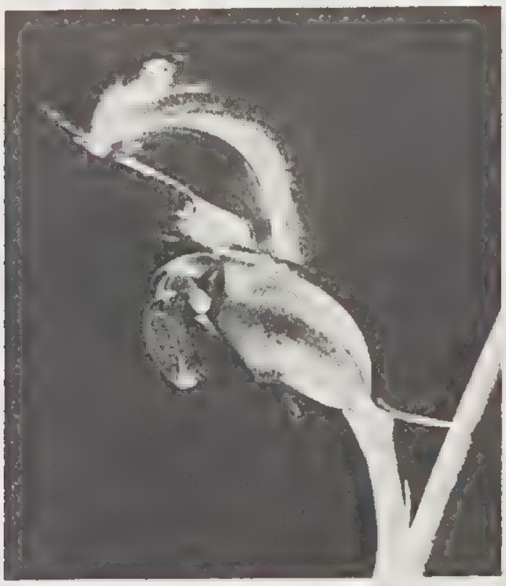
Now the greenhoods are safe for the moment; but the situation is far from satisfactory. Until funds are forthcoming to buy up the land, the owners' position is an unenviable one, and of course no government body can tie up privately owned land indefinitely without compensation. On the other hand, the possible extinction of a wild native species is simply not acceptable to a very large number of Australians.

A possible solution is fund-raising by flora and fauna groups and orchid societies in the district and by local government. ANOS Council would be interested to hear of any initiatives in this direction.

Pterostylis ceriflora is one of the "rufa group" of *Pterostylis* having several flowers on a stem up to about 30 cm high arising from the centre of a rosette of leaves at ground level. The flower is about 23 mm long, bright green, with a dark brown lip. The lower sepals are strongly reflexed back towards the main stem in mature flowers, a point which helps to distinguish it from related species. Flowering takes place mainly in September. The tongue-like lip is sensitive and springs upwards when touched or jarred. Any insect landing on it is likely to be carried abruptly into the upper part of the flower where it is temporarily trapped. If the insect repeats the *faux pas* at another flower it may effect pollen transfer. Natural pollination has not yet been observed, but is probably carried out, as in related species, by a fungus midge (family *Mycetophilidae*). The ripe fruits shed the dust-like seed about five weeks after pollination. The plant is summer-deciduous and dies back to the underground tuber after flowering. In drought years, such as 1981, no flowering occurs. Unlike some other greenhoods *P. ceriflora* does not seem normally to reproduce vegetatively.



Pterostylis ceriflora
Drawing: David K.
McAlpine, 1981



Pterostylis ceriflora Blackmore et Clemesha
Photo: D.K. McAlpine; Print by G. Wells

The habitat of *Pterostylis ceriflora*, a *Eucalyptus-Melaleuca* woodland, is unusual as it is situated in a rain-shadow. Though quite near the coast the locality has a lower rainfall than areas immediately to the north and south which formerly supported rain forest. Other greenhoods growing in this dry patch include *Pterostylis rufa* and the uncommon and attractive *Pterostylis truncata* with its dumpy flowers, solitary on short stems. This is another plant worth preserving in its natural habitat.

The Australian Museum,
College Street,
Sydney
N.S.W. 2000

April, 1982

A NEW SPECIES OF *LIPARIS* FOR AUSTRALIA

by A.W. Dockrill* and P.S. Lavarack**

Liparis condylobulbon **Reichb.f. Hamb. Gartenz. 18 (1862)34; Seidenf., Dansk Bot. Arkiv 31(1) (1976)70-71; Hallé, Flore de la Nouvelle-Caledonie 8 Orchidacées (1977)286-288; Lin, Tsan Piao, Native Orchids of Taiwan 2(1977)217-219.**

Liparis confusa J.J. Smith, Fl. Buitenz. 6(1905)275, fig. 211; Schlechter, Repert. Spec. Nov. Regni. Veg. Beih. 1(1911)205 & ibid Beih. 21(1923-28) t 78, no. 285.

Liparis confusa var. *biloba* J.J. Smith, Bull. Buitenz. 2.5. 14(1914)32.

(For a detailed synonymy see Seidenfaden loc. cit.)

Plant epiphytic or lithophytic. Stems tufted, or occasionally spaced up to about 2.5 cm apart along rhizomes, 4-15 cm long, swollen at the base where 1.2-2.0 cm diam.; tapering to a long neck averaging, in the narrowest part, about 0.5 cm diam. Leaves usually 2, 5-20 x 1.2-2.2 cm narrow oblanceolate, not greatly keeled, somewhat fleshy but not very thick. Inflorescences erect, rarely extending above the leaves, about 8-15 cm long, the peduncle with a varying number, but usually 4-6 bracts; rhacis bearing numerous flowers, the pedicels subtended by small, very closely-sheathing, subulate bracts; pedicels 3.0 x 0.5 mm. Flowers smallish for the genus as known in Australia as the tepals are only about 3 mm long; tepals greenish cream, labellum dull orange. Dorsal sepal usually ± at right angles to the column, about 3 x 1.2 mm, ± elliptic. Lateral sepals sharply deflexing with age so that they ± sheath the ovary, about 3 x 1.6 mm, ± ovate but somewhat asymmetric. Petals initially at right angles to the column, somewhat deflexing with age, about 3 x 0.2 mm, linear. Labellum suberect in the proximal half then decurved or deflexed at about the middle, when flattened about 3 x 2 mm, ± oval, emarginate; margins of distal half minutely ciliate, the cilia barely discernible under anything lower than about a x 20 magnification. Column about 1.5 mm long, swollen at the base where about 0.8 mm broad but only about 0.5 mm broad near the apex where it is slightly curved forward. Anther only about 0.5 x 0.5 mm, much broader than deep, rostrum-transverse oval. Pollinia minute, rather broad for the genus.

This is a widespread species which has been known under a variety of different names in different regions. The Australian material agrees well with *L. condylobulbon* Reichb.f. but also is very similar to *L. persimilis* Schltr and was thought to be this latter taxon for some time. A detailed comparison carried out with the assistance of Dr Seidenfaden of Copenhagen, convinced the authors that *L. condylobulbon* is the more appropriate name. It is considered likely that *L. persimilis* and *L. condylobulbon* will be found to be conspecific when a comparison can be made of the type specimens. The Australian material appears identical to the New Caledonian material (as illustrated by Halle loc. cit.), and this has been determined as *L. condylobulbon.*

This species occurs from South East Asia to Samoa and Fiji and is not uncommon in most areas in between. In Australia it has been collected on one occasion only, near the Rocky River on Cape York Peninsula, where it grows in rainforest gullies at about 500 m altitude. It grows on small trees or rocks where it gets a moderate amount of light. The flowering season is not yet fully ascertained but is May to August in cultivation.

This species is readily distinguished from all other Australian species of the genus, none of which have stems (pseudobulbs) which taper to a long neck, a feature which is quite pronounced in the present species.

Acknowledgements: The authors would like to thank Dr G. Seidenfaden of Copenhagen and Mr N. Howcroft of Bulolo, Papua New Guinea for advice concerning the identity of this species.

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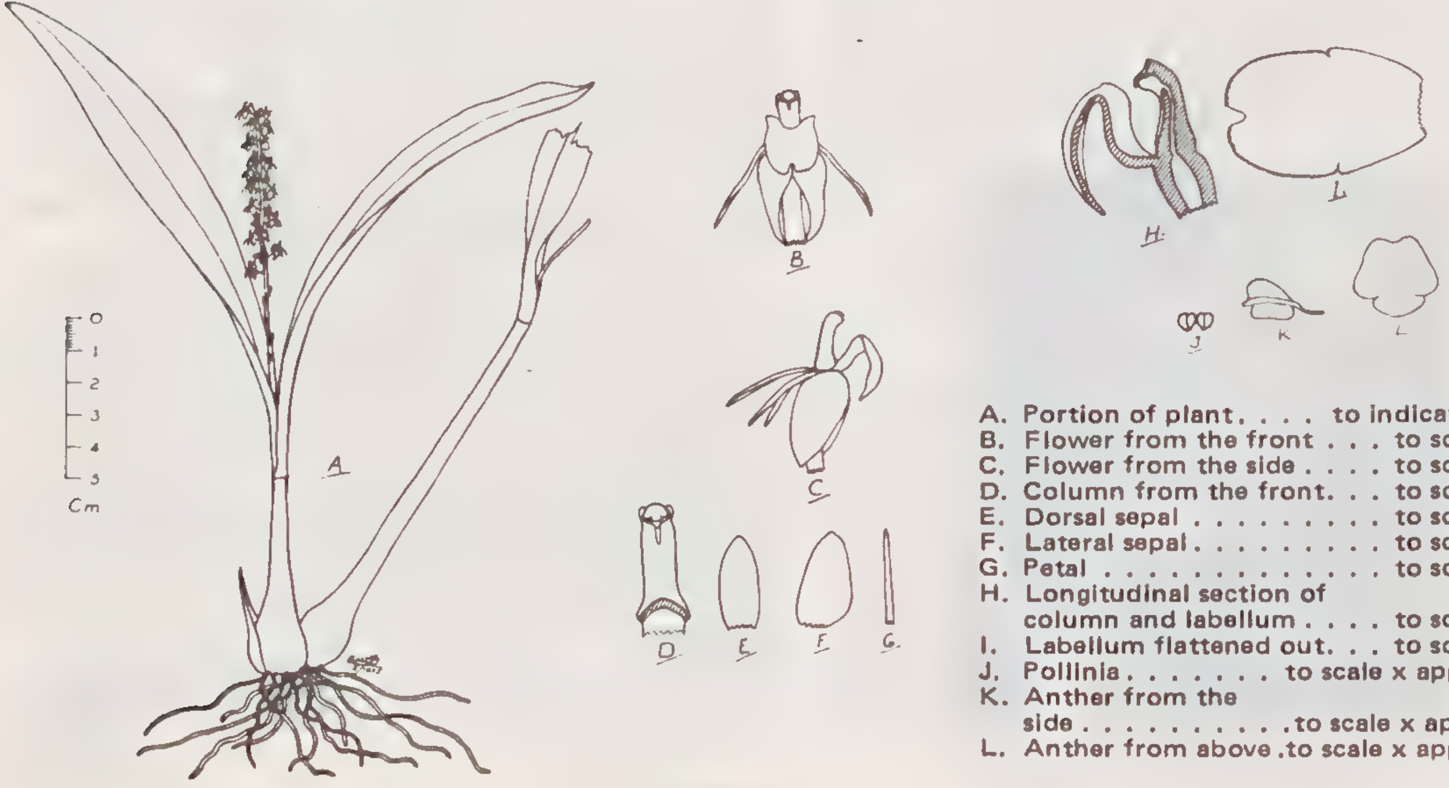
April, 1982

Liparis condylobulbon Reichb.f.

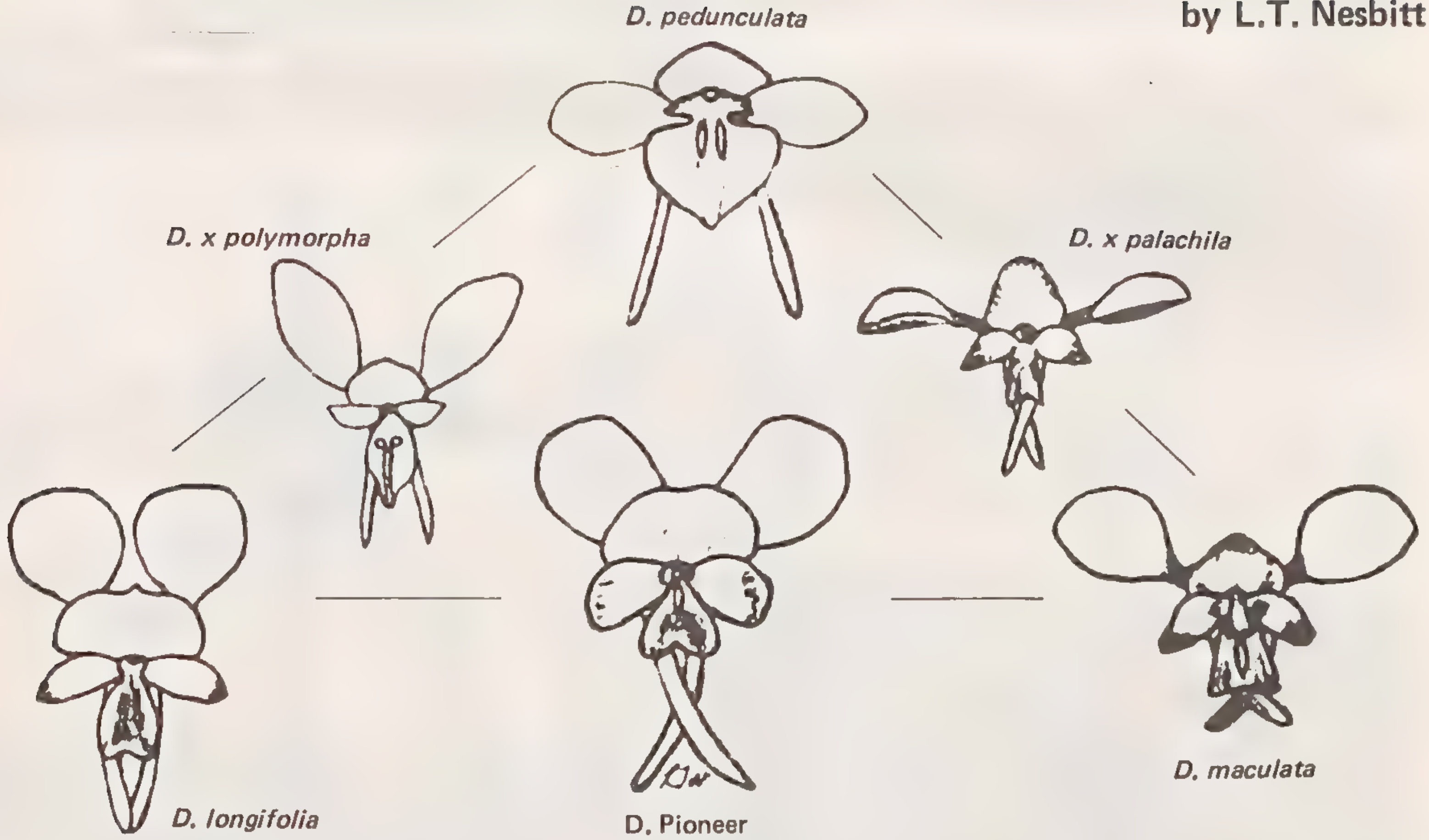


A. Portion of plant . . . . to indicated scale
B. Flower from the front . . . to scale x 10
C. Flower from the side . . . . to scale x 10
D. Column from the front. . . to scale x 20
E. Dorsal sepal . . . . to scale x 10
F. Lateral sepal . . . . to scale x 10
G. Petal . . . . to scale x 10
H. Longitudinal section of column and labellum . . . . to scale x 20
I. Labellum flattened out. . . to scale x 20
J. Pollinia . . . . to scale x approx. 50
K. Anther from the side . . . . .to scale x approx.50
L. Anther from above .to scale x approx. 50

All drawings by A.W. Dockrill.

MORE *DIURIS* HYBRIDS

by L.T. Nesbitt



When we introduce a third species to the parents of Diuris Pioneer, two additional hybrid combinations are possible. The species I have in mind is *Diuris pedunculata.* The petals on the clones I have seen usually stand out sideways and in some clones also come forward creating a half-open flower. The species is found is all States except W.A. and N.T. It is widespread in the Mt Lofty Ranges in S.A. but is not common these days. My mother and her cousin can remember it in the Bridgewater-Verdun area 50 years ago but I have never found it there. *D. pedunculata* bears 2-5 large bright yellow flowers on a 450mm tall stem. It is a very eyecatching orchid which probably accounts for its scarcity today. It is easy to grow and flower in cultivation but is rather slow to multiply. Robust plants make two tubers in most years while weaker plants just replace their one large obovoid tuber annually. There are 5 to 8 leaves on a mature plant, each about 150 mm long. Flowering time (Aug-Sept on the Adelaide Plains) overlaps that of *Diuris longifolia* and *Diuris maculata,* the other species under discussion.

D. pedunculata is a variable species. Some plants have small open pale flowers whilst the best forms are large and deep yellow in colour with an orange splash on the labellum. The wide flat labellum is spade shaped and ends in a point. There are small brown dots on the back of the sepals and petals on all the clones I have seen, and these are sometimes on the front of the flower also. A clear yellow clone would be very useful for hybridising. The undesirable characteristics of *D. pedunculata* from a hybridist's point of view are the low number of flowers and their short life (they last 5-10 days). Good points are the ease of culture, the bright yellow colour, different shape and large lip.

HYBRIDS

I have remade both these crosses but seedlings have not flowered yet. My comments are based on a few natural hybrid clones which I have grown for some 2 or 3 years. They are all vigorous, freeflowering and multiply vegetatively. *D. pedunculata x D. maculata* gives the naturally occurring hybrid *D. x palachila.* My plants grow to 450 mm tall and carry 5-9 flowers in September. Colour is yellow to cream covered with large brown spots and splashes. The spotting, elongated dorsal sepal and short lip of *D. maculata* are dominant. The *D. pedunculata* influence is seen in the position of the petals which stand out sideways. They do not reflex back, as in *D. maculata*, but are twisted to face upwards placing them edge-on in front view. The large lip of *D. pedunculata* does *not* carry through to the hybrid; at least not in my clones. Judging rules usually specify flower size across the petals so *D. pedunculata* hybrids gain a size advantage which they do not really deserve. *D. x palachila* plants have 2-4 leaves and the tuber is obovoid and large. Two tubers per plant annually would be the normal increase.

D. pedunculata x D. longifolia gives the putative natural hybrid *D. x polymorpha.* There is some doubt in my mind if this name is correct so perhaps the botanists amongst us can clear up the confusion. I have two similar clones which probably have this parentage. They are tall (500mm) robust plants with rather open shaped bright yellow flowers. The petals are large and widely spaced. The lip is spade shaped but is not flat. It has a central ridge and folds back sharply on either side giving a narrow front view. There are 4-5 flowers per plant in September. Colour is a uniform light yellow with a flush of brown on the backs of the flower segments. Each plant has 2-4 leaves, and produces two long thin tubers which shoot on one end only.

All three hybrids are robust, free-flowering, easily grown plants which multiply. Their main drawback is that the flowers do not last very long. Further crosses with the later flowering species such as *D. punctata* and *D. brevifolia* will hopefully improve the colour range, extend the flowering season and lasting qualities of the blooms. These three hybrids are well worth growing if you can get them, especially since they flower for the spring shows.

March, 1982

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CALADENIA IN WESTERN AUSTRALIA AND NATURAL HYBRIDISATION

by R. L. Heberle

The genus *Caladenia* in Western Australia has been widely and lavishly distributed over about 34,000,000 hectares within a rough triangle bounded by Shark Bay in the north, Augusta in the south-west corner and Israelite Bay in the south-east. Within this vast area grow the 40 species and 10 varieties that have been named and described.

The genus reflects a tremendous diversifiaction and a high degree of specialisation and adaptability and flourishes over a wide variation of geographic, climatic and ever-changing habitats. *Caladenia* plants seem equally at home in the high rainfall areas in the south-west corner and in the drier north and east and in the arid inland goldfields up to 600km from the coast.

My personal interest in terrestrial orchids comes from many years of exhibition and display to the public, visiting the same colonies at the same time each year and being constantly confronted with problems of identification. It seems to me that many of the problem forms of *Caladenia* are more likely to be hybrids than un-named species.

Five years ago I decided to make a project of attempting to isolate these "presumed" hybrids and match them to parent combinations, to record relevant information, to press and photograph the specimens in the hope that this work might assist in the future naming of new species. Although I had previously seen "presumed" hybrids as far north as the Murchison River, eastward to the east of Esperance and inland to Coolgardie, I decided to concentrate this work in the extreme south-west corner with the expectation that hybridisation would be more abundant in the integrated colonies there than elsewhere. As I live in Albany I could visit these colonies throughout the flowering periods.

So far, the most productive colonies have been those that grow adjacent to rivers, streams, lakes and swamps — and on, and around, granite rocks where the insects are very active. I hope to study the specific fertilising insects in the future and possibly other species isolating mechanisms which may have broken down to produce hybrid swarms.

The project was undertaken with the expectation that hybrid progeny would generally exhibit prominent structural features of one parent rather than the other and that possibly the pod-parent or the pollen-parent would be dominant, but this is not always the case. Apparent indications that the cross between pod-parent and pollen-parent (A x B) and the reverse (B x A) produce two distinct and different hybrids may well be evidence merely that one parent is more dominant than the other, or that some back-crossing has occurred, or that the hybrid has "selfed" and thrown to one parent or the other. These are distinct possibilities in hybrid "swarms". However, in the cross between *C. multiclavia* and *C. filamentosa var. filifera* (fig. 1) each flower has dominant structural features from each of the parents!

Other pointers noted are that uneven and irregular calli rows, wavy and angular lateral sepals can assist in identifying hybrids. I also note that if either of the parents is a fire-stimulated flowerer the hybrids will be likewise.

The presence of a number of un-named species together with the so-called "complexes" such as that of *patersonii - huegelii - filamentosa* and *doutchae* (which contains numerous variations, races and possible hybrids) further complicates a complex issue. Nevertheless I have enjoyed some successes as preliminary findings suggest that apart from the isolation of early and late flowering species, most caladenias hybridise naturally. Some are capable of crossing with a number of others, this being demonstrated by *Caladenia flava - latifolia - reptans - marginata - filamentosa - doutchae - patersonii - huegelii - radiata - lobata* and *cairnsiana*.

At this early stage I note that certain hybrids have established stabilised colonies in the areas east of Esperance, Jerramongup and Manjimup, these being the crosses

(continued . . . page 80)

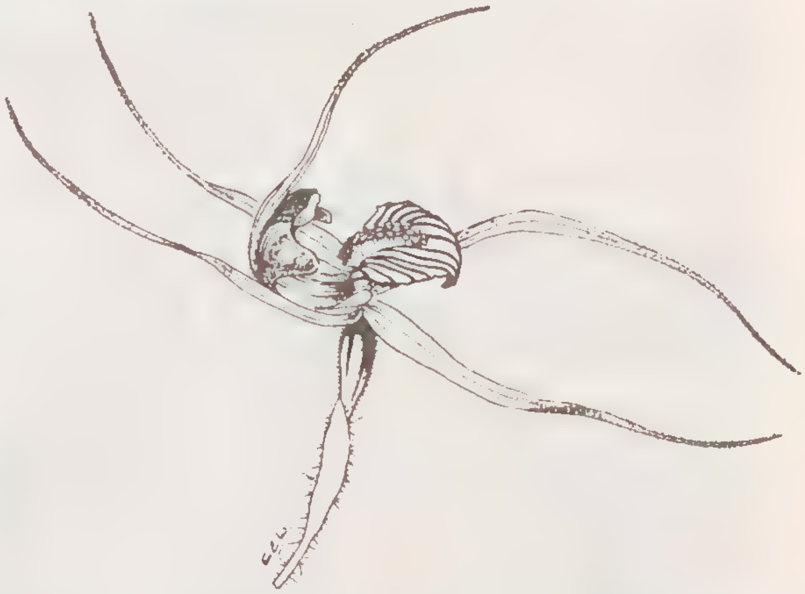


Figure 1. *C. multiclavia x C. filamentosa var. filifera.* This hybrid is rare even though both parents are plentiful. The photograph (Fig. 7) shows how closely the hybrid reflects the united tepals and the labellum of *C. multiclavia*; while the other parent is seen in the calli and the tepal filaments. Colouring is a beautiful shade of pink diffused through orange to red — from both parents.

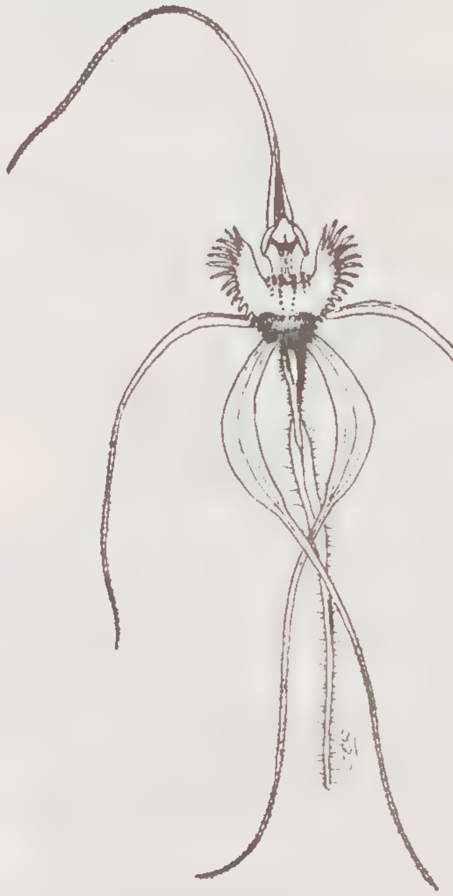
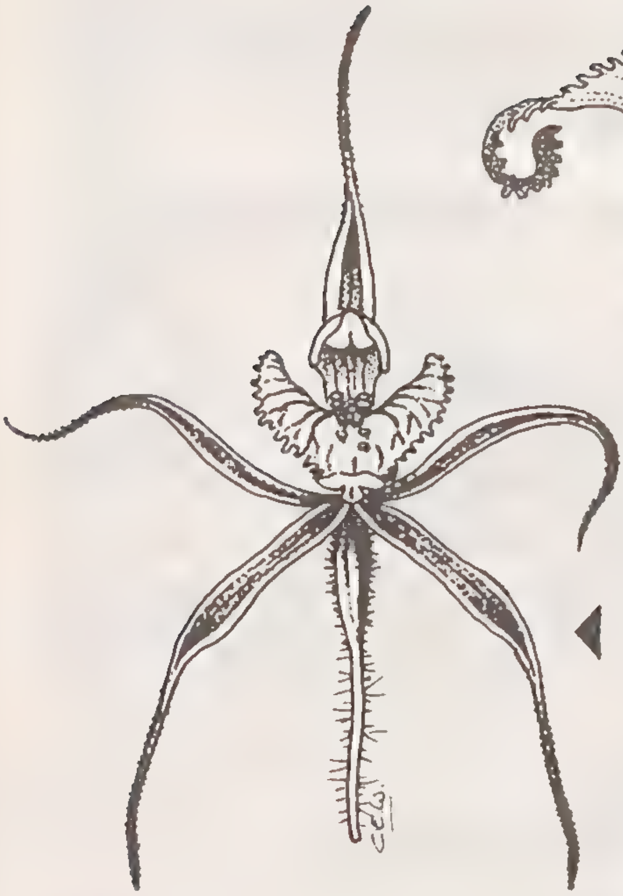


Figure 2. *C. patersonii x C. dilatata var. falcata.* A common and widely distributed hybrid — stabilised into colonies in some areas. *Var. falcata* shows little variation over a wide range but *C. patersonii* is very variable; hence the hybrid varies considerably. Colour is whitish to cream (rarely pale green). Tepals follow the structure of *C. patersonii*. The dilated labellum fringe and purple tip favour the other parent. This hybrid occurs also in most eastern States.



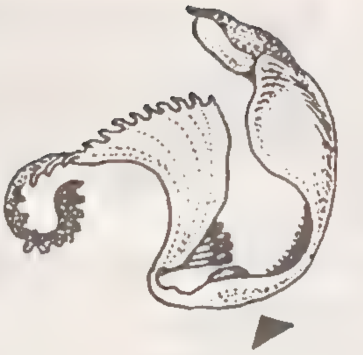
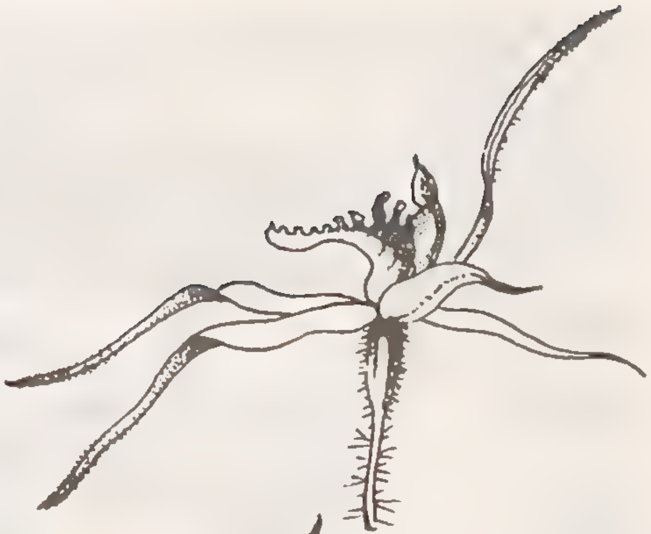


Figure 3. *C. ericksonae (= C. filamentosa x C. doutchae?)* Named by Nicholls in 1950 (collected by Rica Erickson) this taxon is very variable but experienced amateurs consider it to be the result of multiple hybridisation between the "complexes": *C. doutchae — filamentosa — cairnsiana — radialis.* All these have striped labellums. The hybrids are widely distributed and plentiful — especially inland. They reproduce vegetatively as do most of the parents.



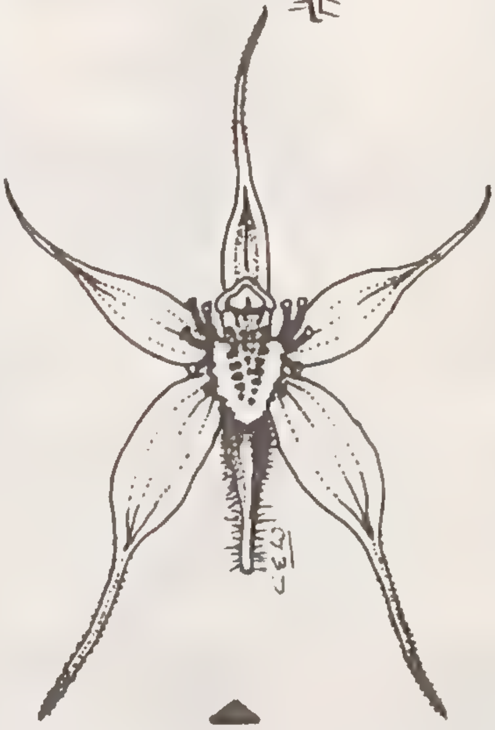
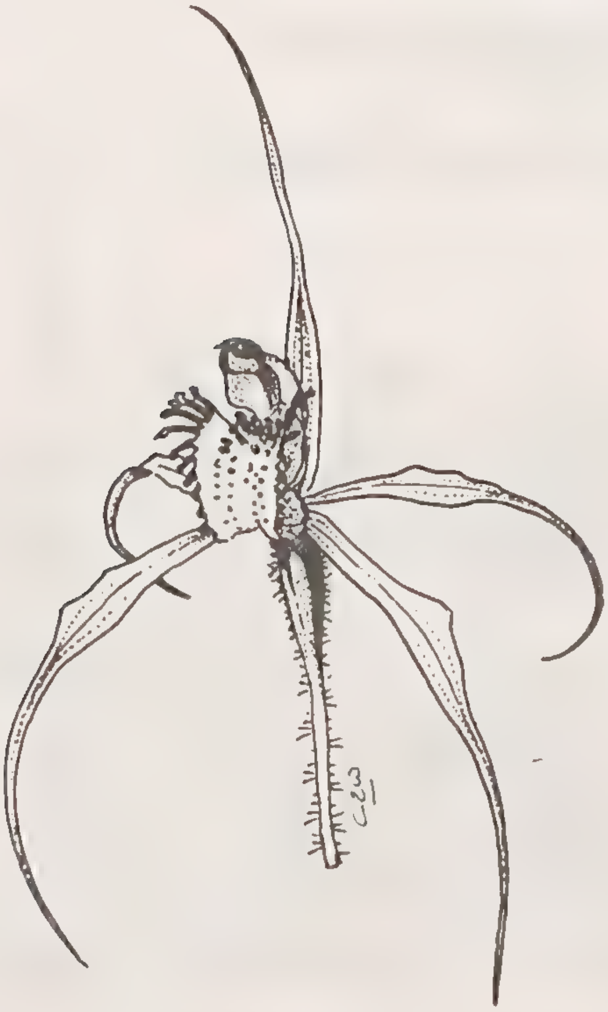


Figure 4. *C. triangularis* (= *C. patersonii x flava*). Named by R.S. Rogers (1927). Collected by Colonel Goadby from Highbury near Narrogin (1924). Structural features of both parents can be seen by comparing the photographs (Figs. 6 and 8). The triangular labellum comes from *C. flava.* Colour is pale yellow to cream with the red markings of *C. flava.* The hybrid is widely distributed but never abundant. It reproduces vegetatively.



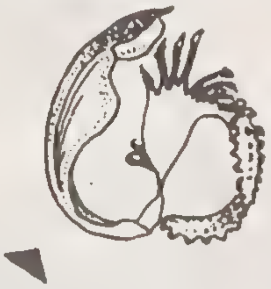


Figure 5. *C. patersonii x C. barbarossa* Both parents are widely distributed and abundant throughout the "Southwest Corner". The hybrids show great variation — as does *C. patersonii* — but this is not so with *C. barbarossa* (apart from a pure green form). The name *barbarossa* (= "redbeard") refers to the dense mat of red hairs on the labellum. Its colour is pale green to yellowish, the purple stalked calli rising from the base of the labellum and at an angle on each side with reddish hairs on the tip. Tepals are short and angular. This is reflected in the (quite common) hybrids.

All drawings by C. Woolcock.

between *C. flava* and *C. latifolia* and between *C. patersonii* and *C. dilatata var. falcata* (fig. 2). The project suggests that *C. ericksonae* (fig. 3) and *C. triangularis* (fig. 4) are in fact hybrids.

This report is tentative and preliminary and is made in the hope that other enthusiasts may be influenced to do similar work in other areas. A combined effort should eventually bring into clearer focus the natural hybridisation of *Caladenia* in Western Australia. Meanwhile the author invites constructive criticism of this paper. A beginning must be made — especially as the W.A. Government plans to release a further 3,000,000 hectares of virgin land for agricultural development during the next ten years.

The following table is offered as a basis:

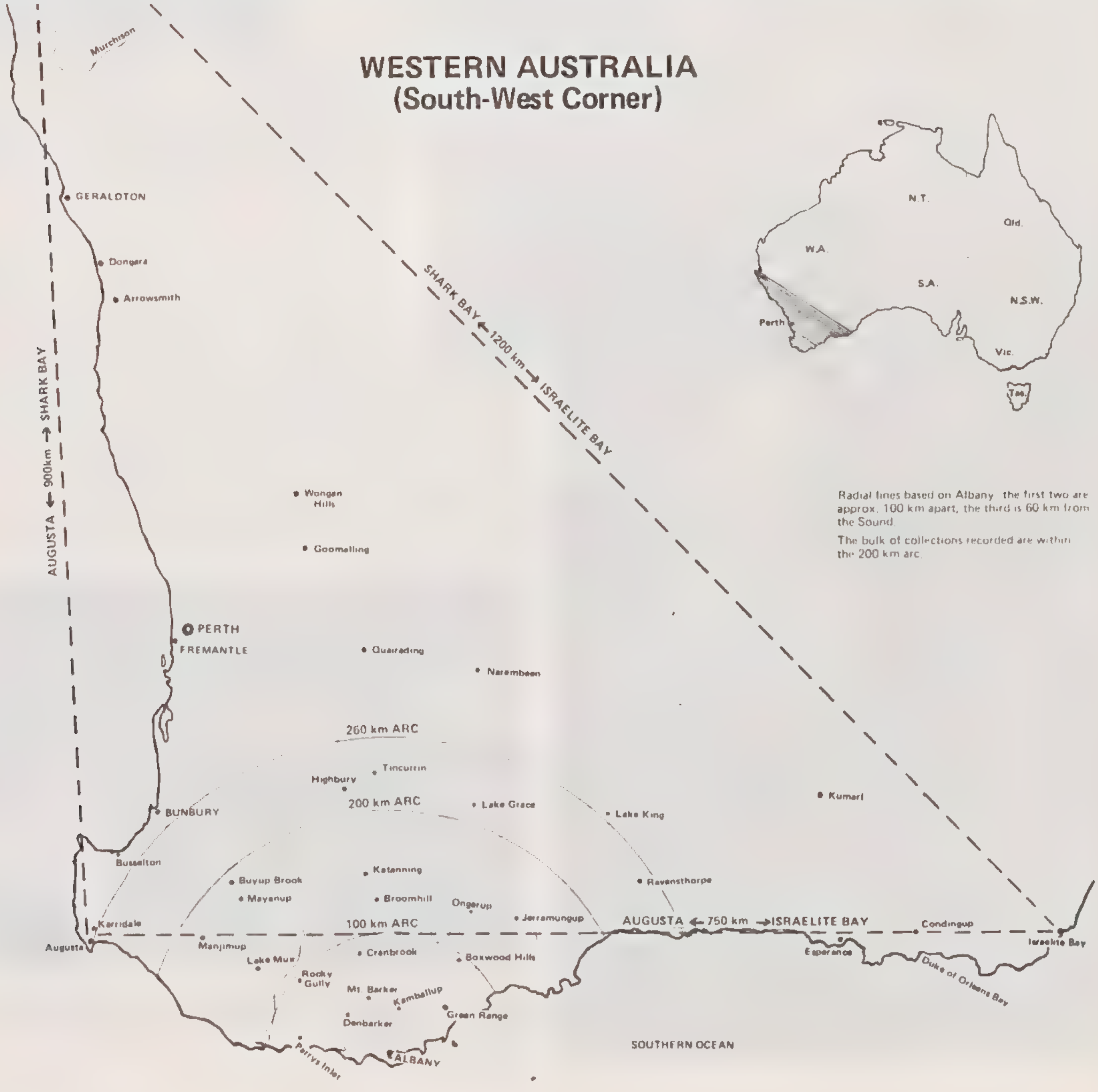
NATURAL HYBRIDISATION IN *CALADENIA* IN SOUTH WESTERN AUSTRALIA

Parent Species		Location of Collections	Flowering Months
C. aphylla	(no hybrids recorded)		Mar. — April
barbarossa	*x patersonii*	Buyup brook — Kamballup — Boxwood Hills Ongerup — Jerramungup — Gairdner River	Sept. — Oct.
bryceana	(no hybrids recorded)		Aug. — Sept.
caerulea	*x saccharata*	Boxwood Hills	Aug. — Sept.
cairnsiana	*x filamentosa var. denticulata*	Albany — Kamballup — Green Range Boxwood Hills — Pallinup River — Cranbrook	Aug. — Sept.
cairnsiana	*x doutchae*	Lake Grace — Jerramungup — Green Range Pallinup River — Boxwood Hills	Sept. — Oct.
corynephora	(no hybrids recorded)		Dec. — Jan.
crebra	*x patersonii*	Arrowsmith — Dongara	Aug. — Sept.
cristata	*x filamentosa var. tentaculata*	Kumarl	" "
cristata	*x doutchae*	Lake King	" "
deformis	*x saccharata*	Lake King	" "
dilatata			
var. falcata	*x lobata*	Rocky Gully	Sept. — Oct.
" "	*x patersonii*	Pallinup River — Gairdner River — Jerramungup Ongerup — Cranbrook — Frankland — Gordon River	" "
discoidea	(no hybrids recorded)		
doutchae	*x filamentosa var. denticulata*	Boxwood Hills — Green Range	Aug. — Sept.
doutchae	*x radialis*	Lake Grace	" "
"	*x cairnsiana*	Lake Grace — Jerramungup — Green Range Pallinup River — Boxwood Hills	" "
"	*x roei*	Tincurrin	" "
drummondii	(no hybrids recorded)		June — July
* *ericksonae*	(*possible hybrids between *doutchae, radialis, cairnsiana, filamentosa*)		Aug. — Sept.
filamentosa			
var. denticulata	*x radialis*	Lake Grace	" "
" "	*x cristata*	Lake King	" "
var. tentaculata	*x sigmoidea*	Lake King	" "
var. filifera	*x multiclavia*	Jerramungup	" "
var. dorrinii	(no hybrids recorded)		Sept. — Oct.
var. caesarea	*x var. filifera*	Frankland	" "
flava	*x reptans*	Highbury — Broom Hills — Manjimup — Mt Barker Murchison River — Albany	" "
"	*x marginata*	Denbarker — Rocky Gully — Lake Muir — Mayanup	" "
"	*x latifolia*	Rocky Gully — Manjimup — Broom Hills — Albany Condingup — Duke of Orleans Bay — Lake Muir	Aug/Sept/Oct
"	*x nana*	Lake Muir — Rocky Gully — Parry's Inlet	Sept. — Oct.
gemmata	*x "?"*	Goomalling — Quairading	" "
gemmata var. lutea	(no hybrids recorded)		" "
graminifolia	(no hybrids recorded)		Aug. — Sept.
hirta	*x patersonii*	Green Range — Jerramungup — Cranbrook — Wongan Hills	Sept. — Oct.
hirta	*x filamentosa var. denticulata*	Cranbrook — Amelup — Ongerup	Sept. — Oct.
huegelii	*x lobata*	Frankland — Mayanup — Rocky Gully	Oct. — Nov.
"	*x patersonii var. longicauda*	Numerous variations both parents variable. 20+ locations from Albany to Buyup Brook	" "
"	*x radiata*	Lake Muir — Rocky Gully — Manjimup	" "
"	x un-named (3)	Buyup Brook — Rocky Gully — Frankland	" "
integra	(no hybrids recorded)		
latifolia	*x reptans*	Rocky Gully — Lake Muir — Manjimup — Mayanup	Sept. — Oct.
lavandulacea	(no hybrids recorded)	(possibly a *roei* hybrid)	Sept.
lobata	*x patersonii var. longicauda*	Frankland	Oct. — Nov.
"	*x radiata*	Rocky Gully	" "
"	x un-named (2)	Rocky Gully — Frankland	" "
"	*x barbarossa*	Rocky Gully	" "

longiclavata *var. longiclavata*	*x*	*longiclavata* *var. rhomboidiformis*	Karridale	Sept. — Oct.
longiclavata *var. magniclavata*		(no hybrids recorded)		
marginata	*x*	*nana*	Rocky Gully — Parry's Inlet	" "
"	*x*	*reptans*	Mayanup	" "
macrostylis		(no hybrids recorded)		" "
menziesii		(no hybrids recorded)		" "
patersonii	*x*	*flava*	(= *C. triangularis* possible hybrid)	Sept. — Oct.
var. longicauda	*x*	un-named (2)	Rocky Gully — Frankland	Oct. — Nov.
plicata		(no hybrids recorded)		Sept. — Oct.
radialis	*x*	*roei*	Lake Grace	Aug. — Sept.
radiata	*x*	un-named (2)	Buyup Brook — Mayanup	Oct. — Nov.
reptans		(see above — *flava, latifolia* and *marginata*)		" "
roei	*x*	*filamentosa* *var. denticulata*	Tincurrin	Aug. — Sept.
saccharata		(see *deformis* above)		" "
sericea		(no hybrids recorded)		" "
sigmoidea		(see above *filamentosa var. tentaculata*)		
* *triangularis*		*Possible hybrid *flava x patersonii*		" "

SUMMARY OF TABLE

Interim and preliminary figures suggest that out of the 40 *Caladenia* species named at least 26 hybridise and out of the 10 varieties seven do likewise. There remain at least 19 collections of possible hybrids where further research is required to determine parentage. The collections have been made from approximately 180 locations. The bulk of collections fall within the 200 km radius from Albany as shown on the map.



Radial lines based on Albany the first two are approx. 100 km apart, the third is 60 km from the Sound.

The bulk of collections recorded are within the 200 km arc.

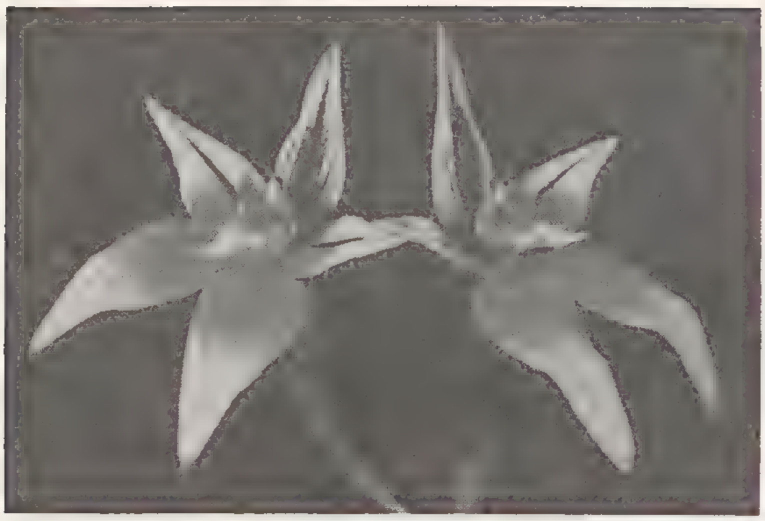


Figure 6. *Caladenia flava* R. Br is one of W.A.'s most common orchids. Handsome pale to vivid yellow with dorsal sepal and petals streaked or spotted with crimson. The stem, up to 30cm high, may carry up to five flowers. Variation is considerable in both colour and form. From Geraldton north the dorsal sepal is pink spotted. To the south and east most have red to crimson marks. There are pure white specimens with pink striped dorsal sepals; and white tipped segments diffusing into yellow are common in some southern areas. The hybrids of *C. flava* all exhibit the distinctive labellum fringe (see Fig. 4). This species was named by Robert Brown (1810) from a collection by Archibald Menzies near Frenchman's Bay, King George's Sound, Albany. (Menzies was surgeon-botanist on the Vancouver expedition that annexed the west coast for England in 1791.)

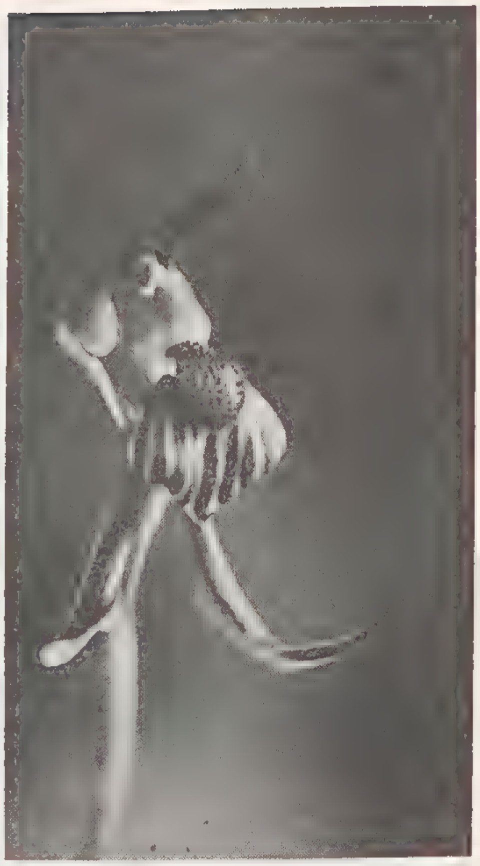


Figure 7. *C. multiclavia* Reichb.f. The dorsal sepal and petals are united almost to the tips. Colour is greenish yellow streaked with red. The labellum, striped with yellow and dark red bands, is the focal point. Being rhomboid in shape and very pendulous the calli are dark red and clubbed (multiclavate). The tepals are on a horizontal plane with the column cradled by the united segments. Once common between Pengelly and Katanning, it is still abundant between Borden and Ravensthorpe and there are outlying colonies as far north as Narembeen. Little variation has been observed except for a pale green form (varying in colour only). It seldom exceeds 20 cm in height and is mostly one-flowered. Plants reproduce vegetatively as well as from seed.

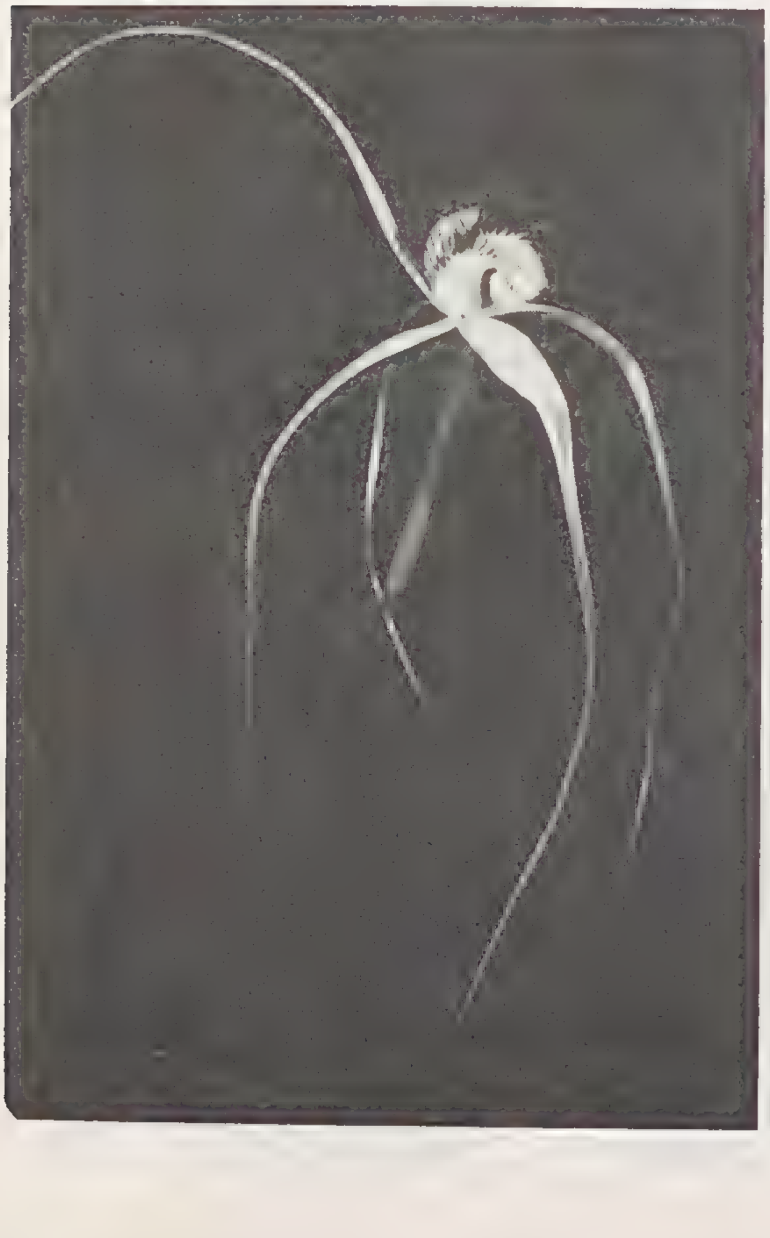


Figure 8. *C. patersonii* R. Br. *var. longicauda* (Lindl.) R.S. Rogers. This is W.A.'s most spectacular and robust terrestrial orchid often exceeding one metre in height and bearing 1-5 flowers 35 cm across the sepals. Colour: pure white to pale yellow with a long pink to red combed fringe to the labellum and golf-stick-like calli of similar colouring in 4 rows (rarely 6). See Figure 9 (close up). The dilated tepals terminate in long caudate dusky tips covered in fine hairs. Reproduction is vegetative and by seed. Hybridises readily with a number of other species.

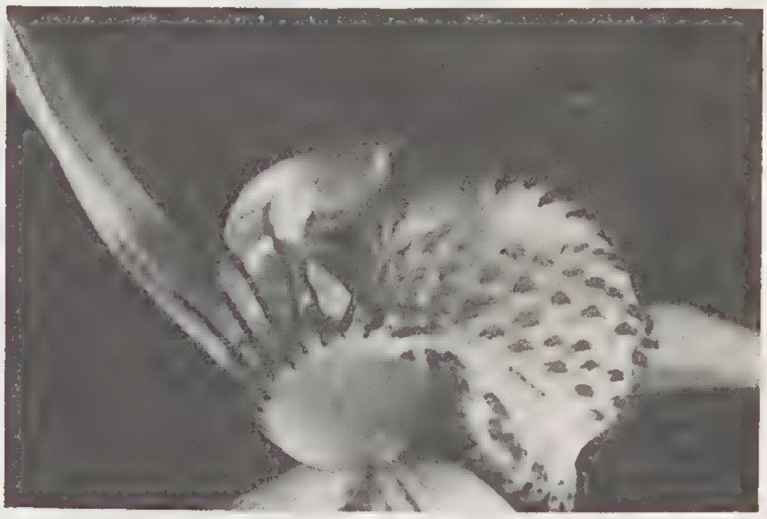


Figure 9. *C. patersonii var. longicauda.* Close up of labellum fringe, calli and column. There are two glistening yellow glands at the base.

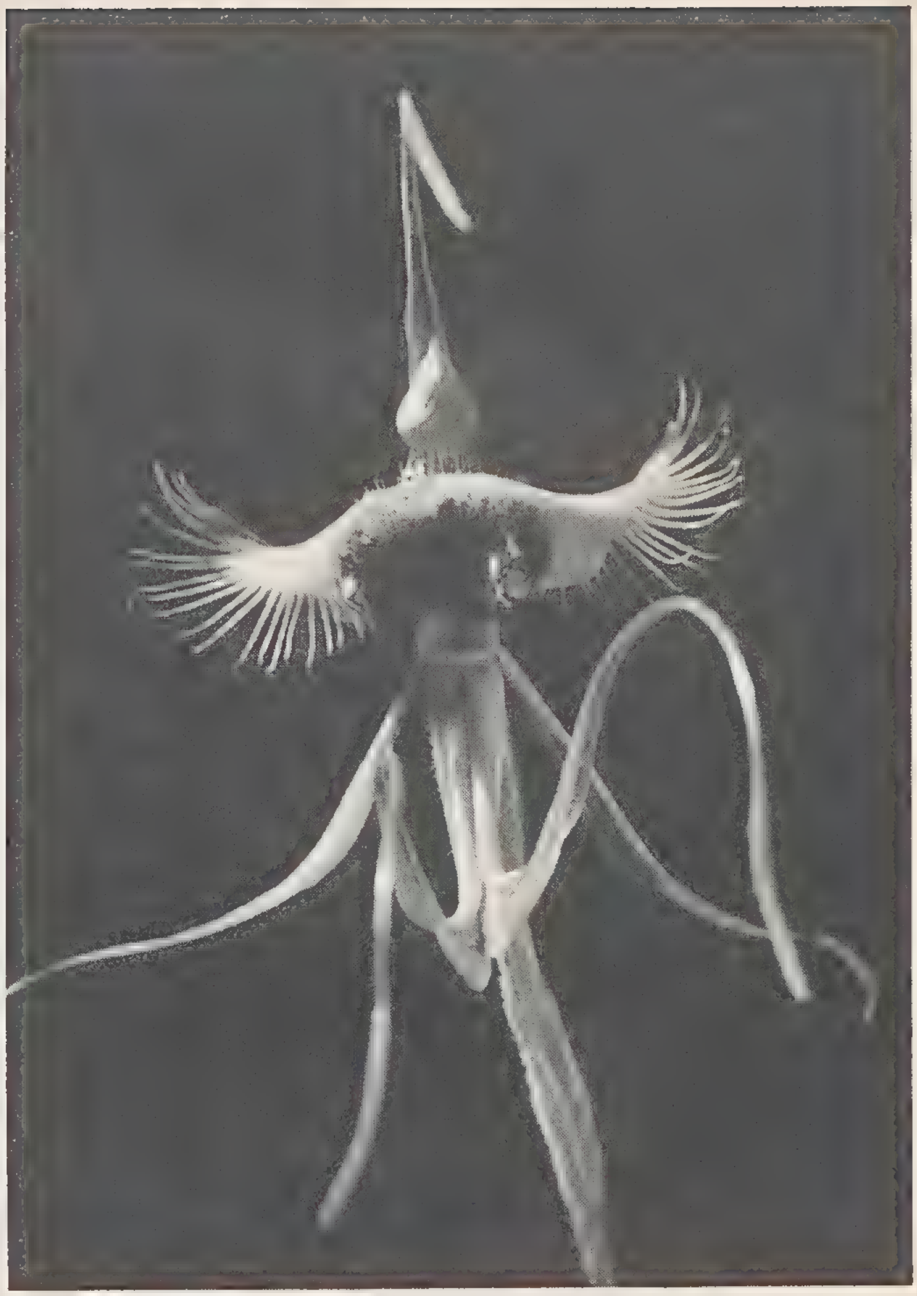


Figure 10. *C. lobata* Fitzg. Considered the "most magnificent caladenia in the West" this species was named (1882) by R.D. FitzGerald from specimens he collected at the Upper Hay River near Mt Barker about 50 km north of Albany. It bears 1-2 flowers on a long stem to 80 cm. The labellum is wide (to 3 cm) and elegantly fringed. Colour is pale green fading to yellow as it ages. The deeply dimpled tip is purple to maroon; the calli purple to dark brown and crowded from the base to the bend. The column has triangular lobes located halfway (called "very peculiar orbicular lobes" by FitzGerald; hence the name of the species). Note that the falcate lateral sepals and the incurved dorsal are delicately clubbed while the petals taper to fine points. The labellum is pendulous, vibrating up and down in every breeze, constantly attracting attention. This species shows little variation except for a pure yellow form, is distributed from Bunbury to the Sterling Ranges, is never abundant except in isolated localities near streams. Some of its hybrids with other species are magnificent.

ACKNOWLEDGEMENTS

Acknowledgements are due to the W.A. Herbarium and to Mr A.S. George for the use of his checklist of the Orchidaceae of W.A. (*Nuytsia* Vol. 1, No. 2, 1971). My particular thanks go to Mr Herb Foote for assistance with photographs and specimens, Messrs C. Sumner and E. Chapman for their field work and specimens; my wife Pauline and daughter Victoria for their support in field work. I am indebted to Steve Clemesha for advice by correspondence; to Collin Woolcock for drawings (figs 1-5) done especially for this article; to Mr N. Butler for photographs (figs 6-10); and to the Editor for his advice, encouragement and assistance in preparing this article for publication.

8 March, 1982

78 Campbell Road,
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All photographs by N. Butler.

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Coelogyne fragrans Schltr

by V.A. Chadim

***Coelogyne fragrans* Schltr is, I think, a fairly rare species, judging by the fact that in many years of collecting orchids in New Guinea I have seen only one plant I could positively identify as such.**

Another related species is widely and wrongly identified as *C. fragrans*. It is lightly scented, fits the description reasonably well and — as for Schlechter's drawings — discrepancies are generally accepted as a lack of his artistic ability. Not until my plant of *C. fragrans* flowered in our garden in Goroka did I realise how exceptionally accurate Schlechter's drawing was and how well the species lived up to its name.

I found my plant growing at the roadside north of Banz (5° 46'S, 144° 30'E) at an altitude of about 1700m. It was indistinguishable from plants of *C. beccarii* Reichb. f., except that it was smaller. This may mean that *C. fragrans* is smaller than *C. beccarii*, or merely that my plant was young, or probably both. An interesting possibility exists, that *C. fragrans* may not be as rare after all, at least in the Highlands perhaps some proportion of young plants of *C. beccarii* one does not bother to dig out may in fact be disguised plants of *C. fragrans.*

When my plant flowered some months later, it certainly proved to be worthy of its name; you could find it with closed eyes by its strong scent alone. And found it was, immediately, by bees or other insects, as can be seen on my photographs: all anthers are missing.

Pseudobulbs are yellow-green to green, according to Schlechter up to 9cm long (mine were smaller), leaves up to 34cm long and 8cm wide, one leaf emerging from the apex of each pseudobulb. Flowers are very close together, sepals 38mm long and up to 15mm wide, petals slightly shorter and very narrow, labellum 33mm long and 18mm wide. All flower parts are white, labellum with brown markings, column suffused with yellow towards anther and the edges.

Because of its close relationship with *C. rumphii* Lindl., Schlechter placed *C. fragrans* in the Section *Succedaneae–Speciosae*, established by Pfitzer and Kraenzlin. The division between *Succedaneae* and *Simultaneae* is not entirely satisfactory, especially where *C. fragrans* is concerned. Both in Schlechter's experience and mine, all flowers opened simultaneously, though other related species open their flowers in succession, *C. beccarii* quite reliably, and my unnamed number CH-156 most of the time.

Coelogyne fragrans appears to grow at relatively high altitudes; Schlechter found his plants at 1000, 1200 and 1600 metres. My plant was sent to Kew in August 1963, marked CH-146.

8 Parker Street,
Curtin, A.C.T. 2605.

8.11.1981

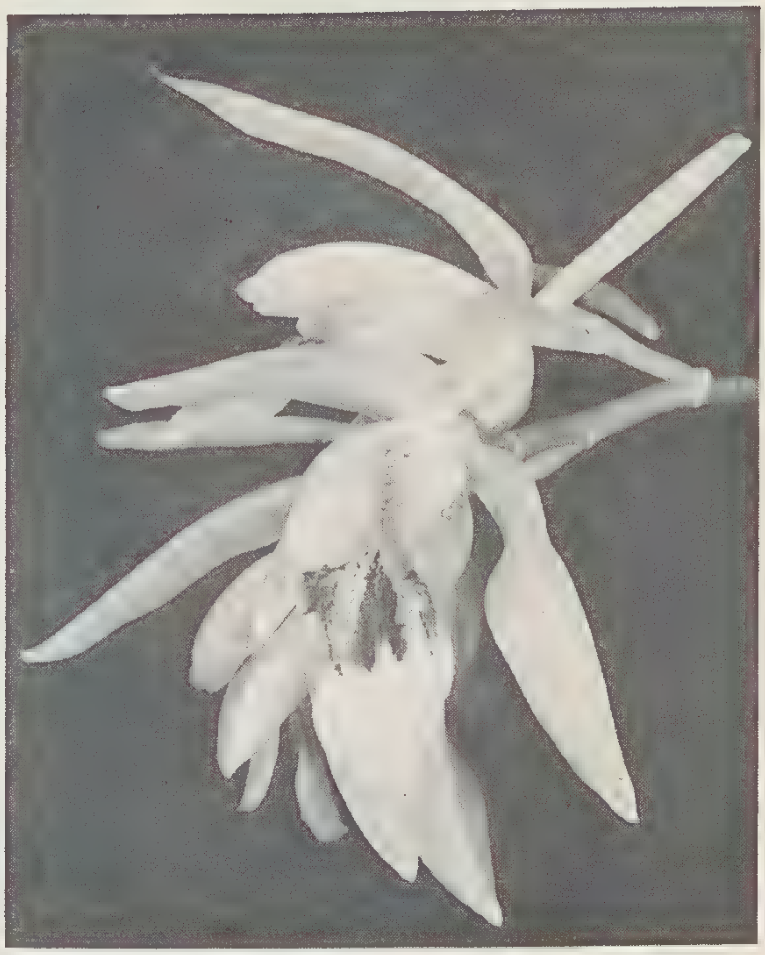

Figure 1. CH-146-I2
Coelogyne fragrans — inflorescence.

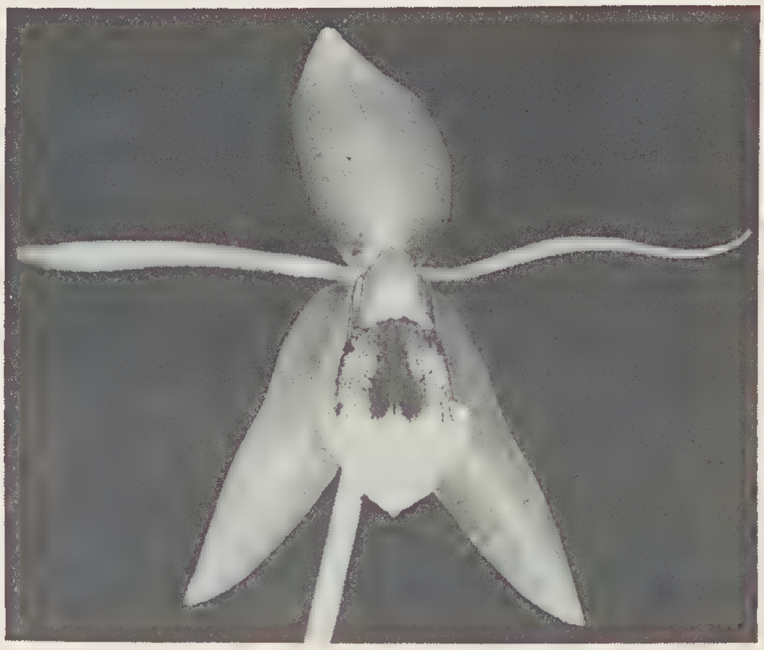

Figure 2. CH-146-F
C. fragrans — flower frontal view.

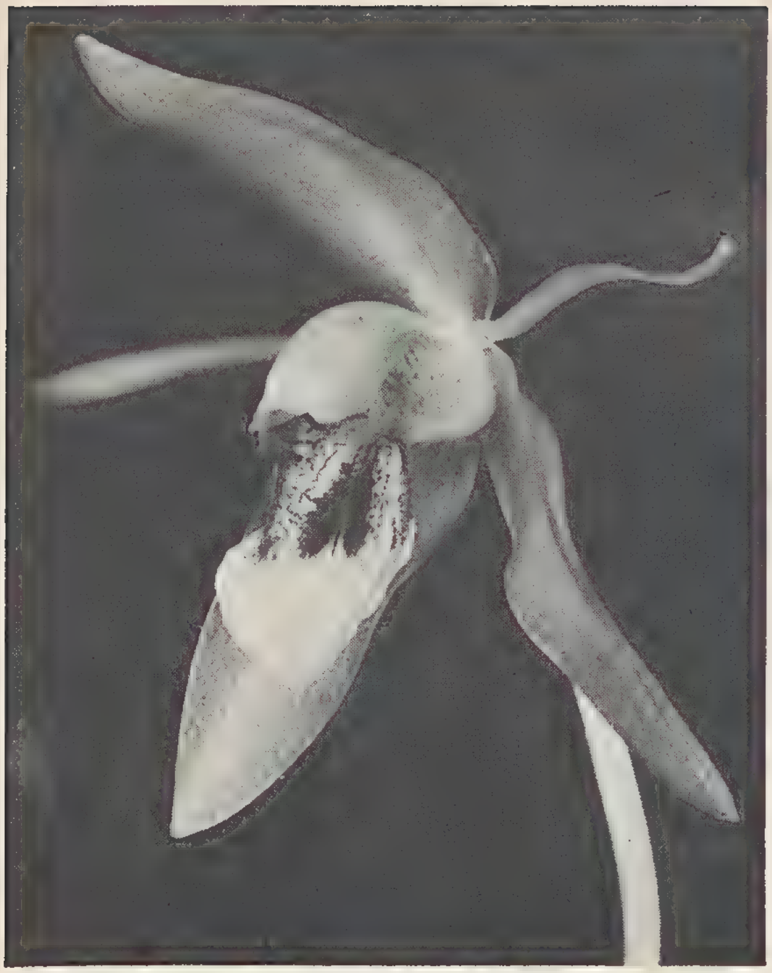

Figure 3. CH-146-O
C. fragrans — oblique view.

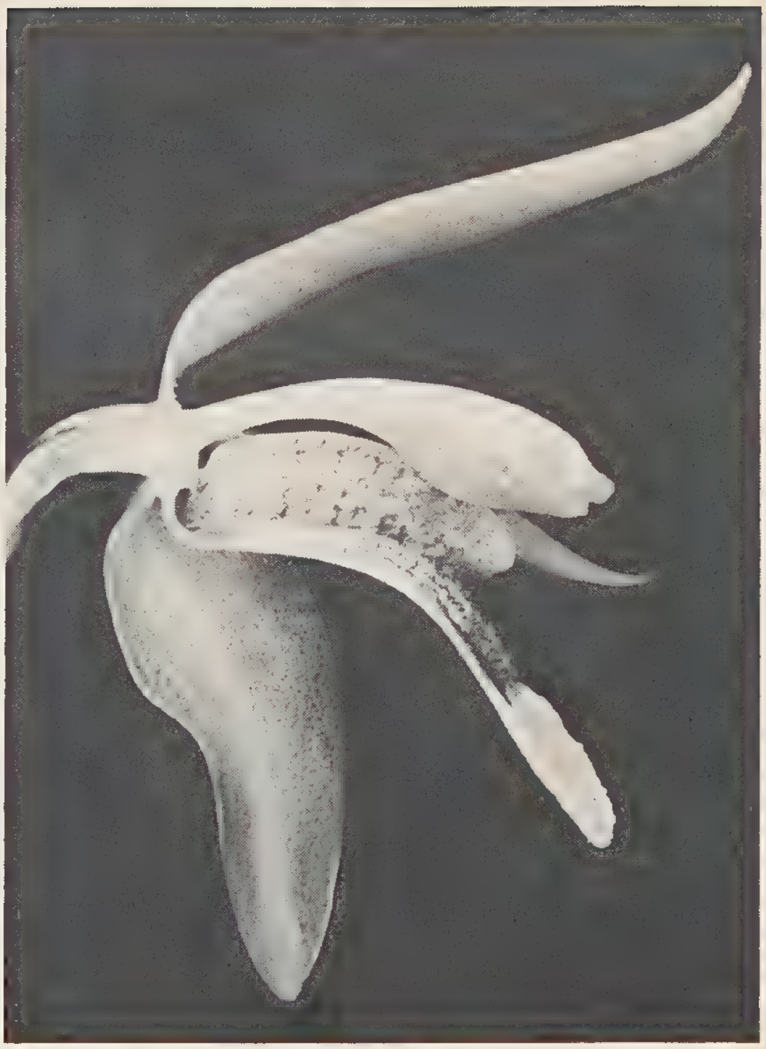

Figure 5. CH-146-X
C. fragrans — flower dissected.
Note: anther is missing.

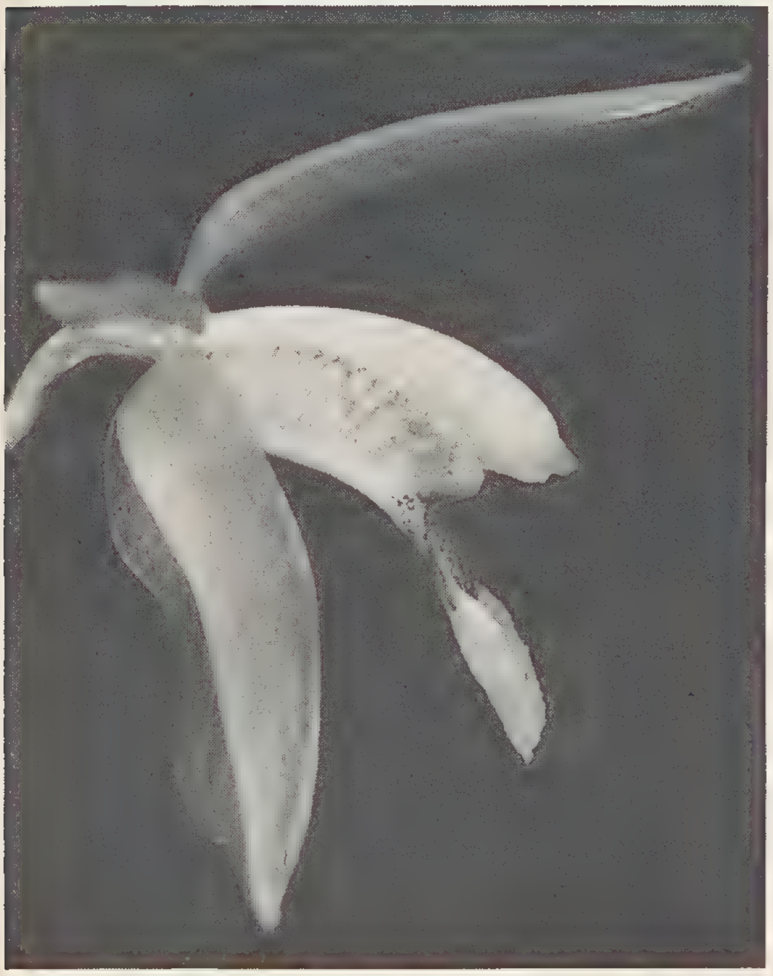

Figure 4. CH-146-S
C. fragrans — side view.

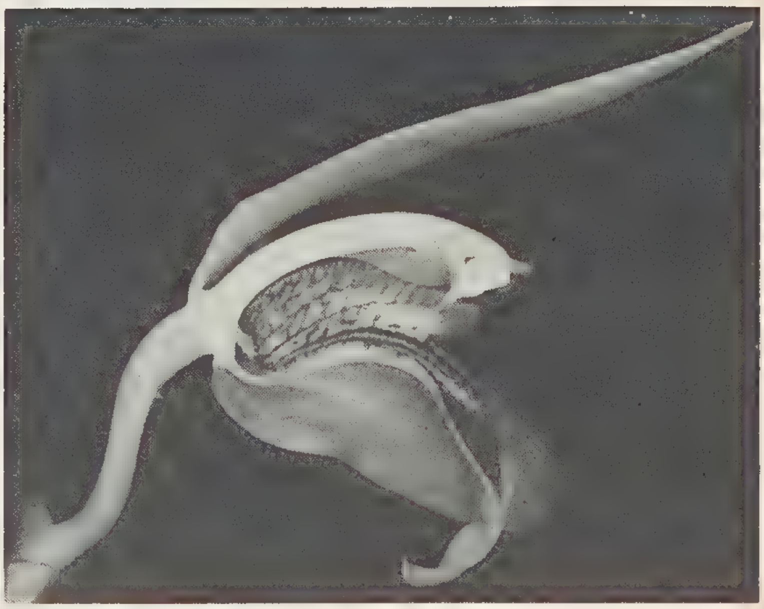

Figure 6. CH-156–X
Coelogyne sp. (repeated from *The Orchadian* March, 1982, p. 62 for comparison. Note that the anther is intact.)

All photographs by V.A. Chadim

CULTIVATION BASED ON HABITAT OBSERVATION
III *Sarcochilus ceciliae*

by Mike Harrison

Of the commonly cultivated species of *Sarcochilus* in Australia, to my mind nothing looks more attractive than a healthy potful of *Sarcochilus ceciliae*. There is just something about the look of this plant that really appeals to me, and to see it growing naturally in the bush only serves to reinforce this opinion.

S. ceciliae makes its home in the ranges of the east coast, and extends from the southern tributaries of the Hastings River in central New South Wales to the Atherton Tableland in north Queensland. There have been reports of it occurring further south, around Taree and Gloucester, and I was told recently that it once grew at Peats Ridge, near Gosford, in a small area of rainforest which is now the Peats Ridge Quarry. It is strictly a lithophytic species and is capable of forming quite extensive colonies. Individual plants sometimes grow into large clumps with a hundred or more leads and up to thirty centimetres across, and under ideal conditions whole rock ledges may become covered by this orchid. More often than not, however, plants grow only into small clumps of only eight or ten leads, forming scattered colonies on boulders and rocky outcrops. The roots of the plants often travel considerable distances and usually find their way deep down into the cool, rocky crevices in their search for food and water. Where there are overhanging trees or bushes the rocks often become carpeted with leaf mulch several centimetres thick, and it is not uncommon to find the roots deep within this thick, protective layer.

S. ceciliae commonly occurs in areas with a southern or eastern aspect, often near rainforest, positioning itself amongst the low grasses and other vegetation able to colonise these sparse, rocky areas. In the southern part of its range, at least, it sometimes grows in association with other lithophytic orchids such as *Dendrobium speciosum var. hillii, D. kingianum, D. gracilicaule* and even *D. x gracillimum* at times. Like these orchids *S. ceciliae* prefers fairly strong levels of light and will not do well in poorly lighted situations. Plants are often seen in positions where they receive full sun for most of the day and although they usually appear a little stunted, the presence of multiple spikes from previous years indicate that flowering has been prolific. Although it often occurs in fairly open country, typically growing on rocks and rock faces in open *Eucalyptus* forest, when one analyses its specific situation, it becomes obvious in most cases that the orchid has chosen a fairly sheltered position within that micro-environment. Although *S. ceciliae* is sometimes seen growing in reasonably exposed positions, such as on the tops of ridges and on windswept boulders, it tends to favour situations where it is afforded at least some protection from extremes. Its thick, fleshy leaves make it able to withstand conditions that would dehydrate and kill most others of its genus, and with the possible exception of *S. hartmannii*, it is the most hardy of the *Sarcochilus* species. This, unfortunately, does not mean that it is an especially easy orchid to grow in cultivation, for, like most of the species of *Sarcochilus*, it does not appear to have any great tolerance for conditions outside its normal range. However, as long as attention is paid to at least partially recreating natural conditions, then success will not be far away.

In nature its only real enemy, apart from orchid collectors, is fire. Because of its lithophytic nature, I imagine at times that wallabies and other herbivores graze on its foliage, but this would be unlikely to cause permanent damage, for as long as the crown of the plant was not eaten, new leaves would soon be produced. Fire, on the other hand, is quite devastating and is capable of killing a whole colony in seconds. The unfortunate practice by many farmers of burning their pastures every year or two to encourage spring growth has, over the years, killed countless thousands of plants, and continues to do so. Last year I visited Tamborine Mountain in southern Queensland, with John Roberts, a native orchid enthusiast of the area, as my guide and companion. We explored an area on the south side of the mountain where *S. ceciliae* grows on rocks alongside a small colony of *D. kingianum*. There was evidence here of the effects of fire. On the larger rock faces *S. ceciliae* was growing beautifully well out of reach of all but the fiercest fire, but on the smaller faces and boulders only burnt-off remnants remained. Nevertheless, John assured me that in spite of extensive collecting and regular fires, *S. ceciliae* is still common on Tamborine, and that the small spot we had examined did not really do justice to an area which is renowned as one of the strongholds of this species.

S. ceciliae has a reputation for being somewhat difficult to grow in cultivation, and the remains of dead plants in the collections of many growers would seem to suggest that this is so. I have always found it does best in terracotta pots. I generally use 10 cm. squat pots and although I have tried both the slotted and unslotted styles, results have favoured the normal unslotted type. I have heard it said that this species should be grown in shallow terracotta saucers but I feel that deeper pots are more successful, for as well as keeping the air spaces in the pot a little cooler, they also allow for more extensive root growth within the pot. It should be kept in mind that the rocks upon which *S. ceciliae* grows in nature always remain relatively cool, even in hot weather. Because of their bulk they are not subject to very great fluctuations in temperature, therefore providing the roots with a fairly stable environment. This is what we must aim to do in cultivation and to this end I usually position one or two large pieces of stone in the bottom of each pot, hopefully to create a cool, stable centre to the pot. Over the years I have experimented with several different mixes and have come to the conclusion that as long as the mix contains a reasonable proportion of stone (at least 40%) and drains perfectly then it will be adequate. At present I am using a mix made up of 60% crushed blue metal (the kind used by the DMR) with an average diameter of about 10cm., and 40% pine bark pieces of the same approximate size. I would, in preference, use Casuarina bark but it is more difficult for us city folks to obtain. As long as the bark has been sufficiently aged prior to use, so that the pine resin has dissipated, it will not burn the root tips as they come into contact with it. Some growers like to soak their pine bark for a day or two in liquid manure before using it but I think this is unnecessary if you are feeding your plants correctly. Another medium I have used with excellent results is scoria, which can be readily obtained from most landscape nurseries for only a couple of dollars per bag. Scoria can be used in the same way as blue metal (as one component of a composite mix) or can be used exclusively without the addition of any other material. It is usually quite dusty when purchased and requires washing before use. One medium I have never tried with *S. ceciliae* is sandstone, the reason being that I have always attempted to reproduce natural conditions by using volcanic rock such as basalt, dolomite or scoria. I imagine, however, that sandstone would probably serve well as the stony component of a mix, for both *S. hartmannii* and *S. fitzgeraldii* accept it without difficulty. Once a plant has been potted, I usually crumble a layer of leaf mould over the surface of the mix, again in an attempt to make the plant feel at home. Some of this crumbled leaf mould eventually finds its way down into the pot and helps to provide a natural environment food but I imagine some nutrients must become available to the roots. I don't know how effective it is as plant to the roots, and I find it looks attractive on the surface of the pot. A couple of handfuls of Cymbidium compost added to a bucketful of the mix would also probably not go astray, but don't overdo it for the Cymbidium compost will certainly increase the waterholding capacity of the mix.

Generally speaking, *S. ceciliae* does well under bush house conditions and will usually prosper in the same conditions as *D. kingianum.* It prefers an open, airy position, protected from the south and west and a shade factor of 70% should be more than adequate in most situations. Feeding should be carried out on a regular basis every two or three weeks, except during the colder months when intervals of five or six weeks would suffice. Nitrosol at half strength is my favourite. Scale insect is often mentioned as a specific problem of *S. ceciliae* but I have never found this to be especially so. All orchids will fall victim to scale insect attack if they are not properly maintained and I find the most satifsfactory way of eradicating this pest is removal by hand. If they are deep in the leaf axiles then a toothpick comes in handy but be careful not to stab the plant. Sometimes a plant may be purchased which is extensively infested and then spraying would be indicated. A mixture of Malathion and White Oil at the recommended rate should prove effective, but keep the plant under close observation for some time to ensure that the scale insects really are finished. Some types of scale go through a dormancy period and spraying during this time is useless, so beware of this trap.

From my own experience I believe that the critical factor determining the cultural success or otherwise of all *Sarcochilus* species is the health of the root system. Have you ever wondered why, when you see a plant of, say, *S. hillii* or *S. olivaceus* in the bush, the roots of the plant often travel for metres, in many cases extending from peripheral branches right down on to the main trunk? And why is it that plants in cultivation often have such difficulty in establishing a healthy and extensive root system? Watering, its frequency and volume, is the answer. There are three ways in which plants in the bush are provided with water. Firstly, and most obviously, rain, when it falls for any length of time, provides absolute wetness to the plant and its immediate environment for as long as it continues. Next, dew, in varying degrees and amounts, forms during the night on both the upper and under surfaces of leaves and on exposed rocks; and thirdly, atmospheric moisture (humidity) is always present to a certain extent, ranging from as low as 20% relative humidity up to 100%. From observations of plants in the bush, I would say that I have listed these three factors in order of increasing importance, for I believe that humidity is the key to successful cultivation, particularly of *Sarcochilus* species.

Let me give you an example. Not a great distance from my home I know a creek where quite an extensive colony of *S. australis* has established itself on the Water Gums (*Tristania laurina*) which grow there. As is their habit these plants are growing mainly on the outermost twigs and branches and have their roots completely exposed to the air. Even on hot days there is a continuous flow of cool humid air down the creek and it is this air flow that is responsible for the well-being of these plants. Rainfall plays a relatively minor role in providing water, for often many weeks go by without any rain at all. Considerably more reliable than rain, dew provides moisture on a fairly regular basis, except during warm weather (night time temperatures of above about 18°C do not seem to allow condensation of water vapour from the air), dry/windy weather, or during periods of low humidity.

Dew is an important source of moisture for plants in the bush, for as well as being fairly reliable, it supplies water in ideal quantities. The relatively small amounts of water deposited as dew satisfy the needs of epiphytic orchids perfectly; it becomes available during the night, particularly in the early hours of the morning, and then, as the temperature starts to increase, it quickly evaporates, leaving the plant quite dry for the rest of the day. Here at work is the "wet/dry" treatment so often advocated in cultural orchid literature ("water your plants and then let them dry out before watering again"). Finally, and to my mind of paramount importance, humidity is a constant factor affecting the well-being of all *Sarcochilus* species. Without reasonably high levels of humidity (at least 60% and preferably around 80%) these plants would quickly become dehydrated and death would soon follow. This happens because the plant literally has moisture sucked out of its leaves, through the stomate cells, due to the difference in water vapour levels between the air and the internal leaf atmosphere. Even if the stomate cells remained closed and refused to allow the passage of water vapour, then the cells on the leaf surface would rupture as vapour escaped.

Unlike many other orchids, *Sarcanthinae* species have no pseudo-bulb in which to store water and food, and are consequently very vulnerable to dry conditions. Incidentally, a hygrometer or wet and dry bulb thermometer is an essential piece of equipment in any greenhouse or bush house. An accurate assessment of relative humidity is essential and one of several humidity boosting devices may be employed effectively if humidity levels are low. The wetting down of paths and under bench areas with a hose or misting system is also an excellent method of raising humidity.

Generally speaking, plants in cultivation receive more water than those in the bush, mainly because growers tend to compensate for a lack of ideal atmospheric conditions by providing water, often in excess. This is understandable, for when plants begin to look dry the obvious thing to do is to water them. But if they are drying out due to low humidity levels or temperatures that are too high then these are problems that require attention. In nature, plants of any species will germinate and grow only where conditions are suitable for their development, in terms of light, humidity, water, fresh air, nutrients, mycorrhzal fungi, etc. Some species are tolerant of a wide range and combination of conditions, while others are very specific in their requirements. Under cultivation, however, the situation is reversed and almost invariably plants are grown under conditions that are outside their normal range. It is then up to the grower to provide all the essentials for healthy growth and it is his ability to make ongoing assessments of his plants and their reactions to the growing conditions that will determine the degree of success he will enjoy. Plants produce roots in response to a need for those things which roots provide; basically water, nutrients and stability. If these things, in particular water and food, are supplied in excess of the plant's requirements, then the stimulus to produce roots is significantly reduced, and an extensive, efficient root system will not develop. Correct watering is probably the most difficult concept for a grower to master, but it is essential for continuing, long-term cultural success. Again, I repeat, observe your plants. If the root tips are dying (shrivelling, discolouring, rotting or simply just not thriving) then something is wrong. Make an educated guess as to where the problem lies (?too much water, ?too little water, ? low humidity levels, ? incorrect watering, etc., etc., — the list of possibilities is considerable) and explore that avenue until it proves right or wrong. If you guessed wrongly then try again; sooner or later things will fall into place and it will become obvious from the condition of your plants that your techniques are paying dividends.

No discussion of *S. ceciliae* would be complete without mention of *S. roseus.* The question of the status of *S. roseus* is often raised, and many growers believe that it should never have been raised to specific rank and instead should have been left as a subspecies or variety of *S. ceciliae*, namely subsp. *roseus*. All I can do here is quote Stephen Clemesha [*The Orchadian* 2,7,92 (Apr. 1967) and 3,3,35 (May, 1969)], when he commented that there are more significant differences between *S. ceciliae* and *S. roseus* than there are between *S. hillii* and *S. tricalliatus,* two species which have been recognised as such for many years. Obviously they are very closely related and the debate will probably go on for some time yet. *S. roseus* is restricted in distribution to the Atherton Tableland and surrounding ranges. Vegetatively, it is more robust than *S. ceciliae*, producing leaves which are thicker and wider but which are sometimes not as long as many forms of *S. ceciliae.* The flowers are usually a deeper pink than *S. ceciliae* and also tend to open more widely. It also produces its leaves further apart on the stem so that individual plants often grow quite tall after a few years.

Aerial layering is an effective method of dividing plants in this condition. Ensure that the aerial section to be removed has at least a couple of roots and simply cut through the stem and repot the severed apical section. You will now have two plants instead of one, for as well as this "new" plant, the basal portion will also produce another lead and continue to grow happily. Contrary to popular belief, *S. roseus* will indeed propagate itself vegetatively; at least it does so in cultivation. It does this in normal *Sarcanthinae* style by producing new leads from the lower part of its stem, although not nearly as vigorously as *S. ceciliae.* Whereas a single growth of *S. ceciliae* will have produced a specimen plant of ten or twelve leads within five or six years, a single plant of *S. roseus* may produce only one or two new leads during the same time. Last year I was given a plant of *S. roseus* which originated from the selfing of a plant, apparently collected from the Atherton area some years ago. The original plant has since died. The seedlings produced from this selfing (only about eight have survived to maturity) are now adults and although I never did see the original plant, I have it on good authority that they are very similar, both vegetatively and florally, to that parent plant. The leaves on these plants are up to 15 cm. long and 10 mm. across, literally twice the size of an average *S. roseus,* and instead of being a purplish/green in colour, as one would normally expect from this species, they are a light mid-green. The flowers too are larger than average, and are a deep pink in colour on long arching spikes up to 20 cm. long. The fact that the original plant bred true would suggest that there may be a whole colony of these "giants" somewhere around Atherton, but I would still like to see sibling crosses done with these plants to get a more accurate picture of their potential, as well as to perpetuate this "variety".

S. ceciliae is very well adapted to reproducing itself vegetatively, and seems to be more capable of doing this than the others of its genus in Australia. Apart from the previously mentioned method of new shoot production from the stem, at least some clones I have seen are able to reproduce vegetatively in two other ways. Firstly, some clones are able to produce, quite freely, keikis from the spent flower spikes, particularly those forms with thick spikes and prominent flower bracts. These keikis, as they drop from the parent plant, are capable of extending a colony over a rock face in much the same fashion as *D. kingianum* does with its aerial growths, although not nearly as rampantly. The second method of vegetative propagation is one I have observed on some clones but which I have yet to fully understand. What happens is this: small green swellings appear around the base of the plant, in contact with, but easily detached from, the roots. These green swellings are, to all appearances, developing protocorms, for within a couple of weeks leaves and then roots begin to emerge, in exactly the same way they would in developing seedlings. But I feel sure that they are not seedlings. As I write, I have in front of me a plant of *S. ceciliae* which is in the process of propagating itself in this manner. I have had this plant for nearly two years and during that time neither it nor any other of my plants of *S. ceciliae* have produced seed. The swelling first appeared about two months ago (late January) and already a couple of them have produced leaves over 10 mm. in length and roots to match. It is difficult to assess just how many developing plantlets there are because new leads are also being produced from the stem in the regular method, but there are at least four. The most advanced of these even had an interrupted development, for while it was still in its "protocorm" stage I lifted it completely away from the parent plant in order to examine it more closely. To do this I used the tip of a knife, and and after about five munites I replaced it, although not exactly in its original position. As I removed it from the root it was resting against, I noticed that there were fine fungal threads helping to hold it in position, and I suspect that the presence of these is a significant factor. Over the following few weeks I watched it closely for any adverse effects but it seemed completely unaltered and, as I mentioned before, it is the most advanced of them all. I am unable to explain the mechanism at work here but I have seen it happen on a few other clones of *S. ceciliae* and also on one plant of *S. hartmannii* several years ago. I would be interested to hear if others have observed anything similar.

There is a mountain out from Grafton which appears to be composed exclusively of basalt. As one approaches the summit from the western side the vegetation changes from open *Eucalyptus* and *Casuarina* forest to a type of dry rainforest, a predominant tree being the prolific orchid host *Trococarpa laurina. Hoya australis* runs rampant over the massive boulders and rock piles, and in the more sheltered positions Staghorns, Elkhorns and Birdnest Ferns grow directly on to the rocks. The eastern side of the mountain, when one looks out towards sea, is clothed in a more dense forest which is obviously maintained by the moisture laden air coming in continuously from the ocean. On the rocks at the southern end of the main ridge, *S. ceciliae* once grew in profusion. It is no longer there, not even a single plant. This area also once supported a colony of *D. gracillimum*, as well as a dozen or so plants of a completely unspotted, clear green *D. gracilicaule.* These, too, have disappeared. If you were to climb up on to the mountain tomorrow, or next week, you would never know that these orchids once grew there. Certainly, you would see others, for *D. speciosum var. hillii* and *D. gracilicaule* are still quite common along with several other species. But, alas, you would be deprived of the pleasure of seeing those orchids, and the really sad part is that you would not even know. I fear that this is the case in many areas. Over the years collectors have relentlessly pursued those "desirable" species and have, in some places, collected them to extinction. This must no longer be allowed to happen, for the future of our orchids rests largely in our hands. Please protect them from further plunder. Find them, seek them out, by all means look at them, watch them, study them, photograph them, even talk to them, but leave them where they are!

April, 1982

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THE BASICS OF NATIVE ORCHID GROWING — 3

by Don Barnham

In continuing with the genus *Dendrobium* it is as well to deal with three hybrids that are akin to those species dealt with earlier, in Parts 1 and 2 of this series. These are *D. x gracillimum, D. x suffusum* and *D. x delicatum.*

D. x gracillimum: A naturally occurring hybrid between *D. speciosum* and *D. gracilicaule*, it is generally accepted that the parents of this cross are *D. speciosum var. hillii* and *D. gracilicaule. var. gracilicaule*, both of which grow in close proximity to one another in mid-range rain forest areas.

Since horticulturists have become interested in the hybridisation of Australian orchids improved forms of *D. x gracillimum* have been made using large flowered forms of *D. speciosum var. speciosum* and the *howeanum* variety of *D. gracilicaule* as parents.

However, whatever the parents of *D. x gracillimum* may be the growing conditions will be the same. Considering that both parents of this hybrid can be both lithophytic and epiphytic it is only natural to accept that their offspring are likewise, and therefore the growing conditions in cultivation will be the same, using D3 type medium for preference (see formula in Part 2).

This orchid, like its parents, needs strong filtered light for best growth and good flowering. It will withstand full sunlight for short periods during the day although full sun during the afternoon should be avoided in the summer season.

D. x suffusum: A naturally occurring hybrid between *D. gracilicaule var. gracilicaule* and *D. kingianum,* this plant can be classed as one of the rarities of the orchid world. It was discovered about 1961 in the forest country a few kilometres west of Laurieton on the Mid North Coast of N.S.W. There have been sundry discoveries of this natural hybrid since then, but it would appear that none to date can compare with the attractive colour form of that first find.

The original description, which was published in *The Orchadian* Vol. 1, page 80, states in part, when describing the flowers: "Colour white heavily spotted and suffused with deep mauve-pink" — surely a most attractive colour combination.

The hybridists have tried to emulate nature in this cross but apparently none, so far, have been able to achieve a colour form as appealing to the human eye as that produced by natural processes.

D. x suffusum is very easy to grow in cultivation, and it takes after its *D. kingianum* parent in this regard. The *D. kingianum* growing conditions suit *D. x suffusum* ideally. Type D3 or D4 mediums are suitable. Plastic or terracotta pots may be used with equal success.

D. x delicatum: This orchid is a hybrid between *D. speciosum* and *D. kingianum*. It is comparatively rare in nature having been found only in isolation over a large area of the forest country of mid-eastern N.S.W. and southern Queensland, and judging by this location, it would have the *hillii* variety of *D. speciosum* as one of its parents.

D. x delicatum is normally lithophytic, growing well back from coastal areas and preferring cliff faces as a habitat. It takes well to pot culture with D3 type medium being most suited to its requirements.

Under favourable conditions these plants will grow into large clumps, and as some clones have lengthy stems, up to 50 cm long, it would be advisable when potting them to consider using a heavy form of container to overcome the tendency for them to become top heavy when fully grown.

It is worthy of note that the tall growing forms are not necessarily the most desirable as the shorter stemmed types usually grow into more attractive specimen plants. There is a white flowered form that multiplies most profusely; the stems are up to 30 cm long and, although the flowers are not large, the plant is very floriferous, generally producing two or three racemes from a stem. With a large specimen plant in full flower the over-all effect is truly beautiful.

Growing conditions are similar to those for *D. kingianum*. Not too much full sun and plenty of water in the hot months of the year. Reduce watering as the weather cools but never allow the medium to dry out completely otherwise shrivelling of the stems will result to the detriment of the spring flowering.

D. aemulum: There are four distinct stem forms of this orchid, and they are as follows:

(1) native to the North Queensland tablelands where it grows almost exclusively on pine trees (*Callitris* spp.). It has very thin stems that are about 3 mm thick and up to 150 mm long usually surmounted by only two leaves. The inflorescence is restricted to one or two flowers.

(2) known as the "box tree orchid" it inhabits south eastern Queensland and north eastern N.S.W. where it grows mainly on the "brush box" tree (*Tristania conferta*). It is more robust than form (1) and it has stems about 6 mm thick and up to 200 mm long. It grows mostly on the lower part of the trunk of the tree, burying its roots in the matted and persistent fibrous bark.

Seeing that this tree generally grows in dense forest areas, and the tree itself is clothed in heavy leaf, the light intensity at its base is very low, so it stands to reason that any orchid adapted to those conditions would always require similar subdued lighting in cultivation.

(3) is the well known "iron bark orchid" which favours growing on the trunk of those Eucalypts known as "Ironbarks", although they adapt to

growing quite happily on any tree with similar hard and rough persistent bark, providing the tree is in a fairly exposed position, and this is where they are quite different from form (2) which grows in rather sheltered locations.

Form (3) has thick stems, up to 10 mm, but they are quite short compared with the other forms. They rarely grow longer than 60 mm and are ususally a yellowish to pale red colour whereas the others are more reddish brown. The range of this form is mostly coastal and extends from about 150 kilometres south of Sydney to southern Queensland.

(4) is intermediate between forms (2) and (3) having stems up to 150 mm long and 6 mm thick. It is more of a rainforest dweller and favours growing on the trunks of trees that have hard and rough bark.

A pleasing feature of this orchid is that it usually has an upright inflorescence whereas those of forms (2) and (3) are inclined to droop.

All forms of *D. aemulum* will grow in a terracotta pot with a very coarse medium, but this type of cultivation is not to be recommended as they are strictly epiphytic and are more suited to slab type culture.

Form (3) can be mounted on a well weathered hardwood slab and grown in a fairly exposed position, whereas the other forms require a more sheltered location out of the range of strong sunlight.

Forms (1), (2) and (4) are better mounted on something less harsh than a hardwood slab. A piece of the trunk of a Rough Tree Fern (*Alsophila australis*) is ideal, but there is every reason to think that natural cork bark would be equally suitable as most epiphytes take quite well to this material. All forms require regular watering. Two or three waterings a day would not be too much for them in hot weather as the hard material they favour as a mounting soon dries out under summer conditions.

Two rather thick glossy leaves at the apex of the stem is the norm for these plants, although forms (2), (3) and (4) may have as many as four leaves. These three forms may also have 12 or more flowers to the inflorescence.

D. tetragonum: This orchid has semi-pendulous stems that are wire-like for the greater part of their length then becoming four angled at the apex end, hence the species name which refers to this formation. Its common name "spider orchid" is derived from the thin tapering spidery shape of the sepals and petals of its flowers.

D. tetragonum has three varieties, with the main differences being in size or colour of the flower. There is *var. tetragonum*, the southern form and the type variety. Its flowers are usually heavily edged with a dark red to purple coloration. There is *var. hayesianum* which is essentially only a wholly green to yellow coloured form of *var. tetragonum*; and thirdly there is *var. giganteum* which has much larger flowers than the type form and is inclined to be lighter coloured in both leaf and flower. The leaves are generally of a softer structure than that of *var. tetragonum* and the whole plant is usually much larger in all its parts.

The *giganteum* variety is essentailly a tropical plant from north eastern Queensland and inhabits the forest at varying altitudes. Although it is classified as being tropical it will grow quite well in Sydney without artificial heat in winter.

The other varieties are to be found in more southern climes, although always in the eastern areas of Queensland and N.S.W. to as far as 100 kilometres south of Sydney.

The plants growing in the highlands favour the trunks of trees that have hard and permanent bark whereas those in the lowlands mostly grow or (should it be said?) once grew, on the "paper bark" trees (*Melaleuca* spp.) that inhabited the coastal swamps that were once a feature of the eastern seaboard of Queensland and N.S .W. Unfortunately most of these areas have now been cleared of trees and the swamps drained and developed for industrial use, or for housing purposes.

In cultivation these orchids must have protection against hot and drying conditions. Mount them on such materials as "ironbark" strip (that which is used by nurserymen for supporting potted climbing plants), a well weathered hardwood slab such as an old fence paling, or on a "paper bark" pole. On any of these materials they should do quite well as long as they are kept cool and regularly watered, for they require a moist air environment and need to be shaded from strong light at all times.

D. falcorostrum: So named because of the shape of the extremity of its labellum which ends in a sharp point and is up-curved, resembling, in reverse, the hooked beak of a falcon.

Its common name "beech orchid" refers to its preference for growing on the "antarctic beech" (*Nothofagus moorei*) which inhabits the high altitude rainforest country north of the Hunter River, in N.S.W., northwards to at least the Macpherson Range bordering N.S.W. and Queensland.

Although this orchid is classified as an epiphyte its best development occurs when organic matter in the way of decaying leaf litter, such as has collected in the branch junctions of the tree trunk, into which its roots can penetrate. These sorts of conditions provide the plants with a constant supply of nourishment enabling them to occasionally grow into large clumps.

The lesson to be learned from the foregoing is that to be able to successfully cultivate this plant there are three main points to consider. Firstly, as it is a plant of the highlands it will require plenty of fresh air about its leaves. Secondly, its root system should never be allowed to become dry; yet, on the other hand, any excess water must readily drain away; and thirdly, whereas it can stand fairly low winter temperatures it does not take kindly to a temperature above 30°C. So with these requirements in mind, the grower has several alternatives under which to grow *D. falcorostrum* satisfactorily. It can be established on a large piece of soft tree fern fibre that is at least 100 mm thick, and hung well up in the bush-house. It can be grown in a pot, preferably a deep terracotta one with slotted sides, using something like a D4 type mixture as the medium. The pot should be hung, or supported, at least a metre above ground level for good aeration. The third alternative is perhaps the best, as it gives the most natural conditions. Establish the plant in a wire basket that has been lined with a thick layer of strong "paper bark" (the bark of *Melaleuca quinquinervia* is quite suitable) and using a medium consisting of 10 mm thick layers of elkhorn (*Platyeerium bifurcatum*) peat on edge interspersed with 30 mm size lumps of hard charcoal or fir bark. The medium must be tightly packed to allow the plant to stand firm and at the same time reducing the possibility of drying out. Ensure that the basket is large enough for plenty of root expansion as this orchid soon becomes stunted if it is too confined.

If possible hang the basket under a large tree where it will receive good but dappled, sunlight.

Apart from yellow and purple markings on the labellum its flowers are usually pure white or creamy white but forms with pale yellow or pale pink flowers are known to exist. The flowers have good substance and are beautifully perfumed.

This is one of Australia's, if not the world's, most attractive orchids, but it is fast becoming rare in its native habitat, mainly because its host, the beech tree, is being felled for timber-getting.

1 Belmore Road,
Peakhurst 2210.

A NATURAL HYBRID IN *DENDROBIUM* FROM NORTH QUEENSLAND

by S.C. Clemesha

Summary: *D. x ruppiosum* **S.C. Clemesha is described as a new natural hybrid and** *D. ruppianum var. blackburnii* **(W.H. Nicholls) Dockrill is discussed and it is concluded that it is not of hybrid origin.**

Dendrobium x ruppiosum **S.C. Clemesha hybr. nov. Planta inter** *D. ruppianum* **A.D. Hawkes et** *D. speciosum* **Sm. intermedia omnibus partibus; caulibus 11-35 cm x 1.2-1.5 cm latissimis medio et fusiformibus; foliis 2-4, 10-15 cm x 3.5-4 cm textura tenui sed firmis et oblongo-ovatis; racemis 34-40 cm longis 35-40 floribus; sepalo dorsali 22-25 mm x 3 mm; sepalis lateralibus 20 mm x 3 mm et subfalcatis; petalis longitudine eadem atque in dorsali sed angustioribus; labello 10 mm x 8 mm subtruncato; columna 7 mm x 2 mm.**

Plant intermediate between *D. ruppianum* A.D. Hawkes and *D. speciosum* in all its parts. **Stems** 11-35 cm x 1.2-1.5 cm, broadest at the middle and tapered to an apex only about one third the diameter of the middle and at the base, tapered to a short thick neck before swelling again into a short basal portion. **Leaves** 2-4 in specimens seen, thin in texture though firm, 10-15 cm x 3.5-4 cm, oblong-ovate and somewhat pointed at the end. **Racemes** 34-40 cm long with 35-50 or more white flowers. **Dorsal sepal** 22-25 mm x 3 mm and slightly tapered towards the apex. **Lower sepals** about 20 mm x 3 mm and somewhat falcate. **Petals** about 2 mm broad and the same length as the dorsal. **Labellum** 10 mm x 8 mm when pressed flat, and three-lobed. Mid-lobe rather truncate and less heavily marked with purple than the lateral lobes. **Column** 7 mm x 2 mm.

Type: From a cultivated plant collected by myself in the mountains near Tinaroo Dam north Queensland in January, 1964. The plant grew on a rock with plants of *D. speciosum var. curvicaule. D. ruppianum* grew plentifully on *Casuarina* trees nearby. The plant flowered in cultivation in September, 1981. The **Holotype** is in the Queensland Herbarium.

The name *"ruppiosum"* is a composite of the specific epithets of the parents of the hybrid.

Notes: When found the type plant was juvenile but even so it was immediately obvious from the stems and leaves that it was a hybrid.

Stems: In the hybrid these are somewhat fusiform as in *D. ruppianum* but in the hybrid the constriction near the base is very short and much thicker than in that species. In *D.ruppianum* the basal portion of the stem is 3, 4, or more cm long. I have man-made hybrids between *D. ruppianum* and *D. fleckeri* and also between the former species and *D. kingianum.* Both of these hybrids show the influence of *D. ruppianum* in their stems though to a lesser degree than in that species. This is also the case with *D. x ruppiosum.*

Leaves: The leaves of *D. x ruppiosum* are quite thin in texture but rather rigid. The difference between the leaf thickness of *D. speciosum* and *D. ruppianum* is great. In *D. x ruppiosum* it is intermediate and easily distinguishable from both of the parent species.

Flowers: The racemes are intermediate between those of the two parent species in thickness. The sepals and petals are intermediate in shape. The labellum is more like that of *D. ruppianum* than that of *D. speciosum* but it shows the influence of the latter in being less truncate.

Another Clone: My plant flowered on stems 11-12 cm tall. I have examined a plant of *D. x ruppiosum* in the collection of Mr N. Stockton who purchased it from Mr W. Upton, whose plant was collected near the Barron Falls. It is also readily identifiable as the hybrid. The new lead on my plant is 17 cm tall. I do not know what the maximum size of the hybrid is though Mr Stockton's plant has stabilized at about 30 cm tall.

D. ruppianum var. blackburnii (W.H. Nicholls) Dockrill.

Mr I. Walters in a personal letter told me that he lost his plant of the natural hybrid between *D. ruppianum* and *D. speciosum* and he thought that *D. ruppianum var. blackburnii* may really be this hybrid. The description Nicholls gives is suggestive of this. I wrote to Dr D.M. Churchill, the Director of the Royal Botanic Gardens and National Herbarium of Victoria to ask for information about the Type specimen of *var. blackburnii.* He wrote back and stated that there is no specimen of it in the Herbarium or in W.H. Nicholls's collection. He further stated that in this case it seems likely that Nicholls made the illustration from a living plant and that he did not prepare a dried specimen.

Nicholls's plate of *var. blackburnii* is no. 397 in the complete Edition of his *Orchids of Australia* (1969). The flowers depicted have broader, blunter sepals than is usual for *D. ruppianum* and they are suggestive of *D. x ruppiosum*. The stems however are not. They have a very narrow and pronounced basal part and are rather usual for a robust specimen of *D. ruppianum.*

In the Spring of 1981 one of my two plants of *D. ruppianum* from the Iron Range area of north Queensland flowered. Its flowers have short, broad segments for *D. ruppianum* and they are a good match for *var. blackburnii*. The plant is the usual form of *D. ruppianum* with stems that are normal for that species and thin textured leaves. The Iron Range area is a long way from any plants of *D. speciosum* and also a long way from Font Hill Station, west of Port Douglas — the locality Nicholls gave for *var. blackburnii*.

I do not know if my plant is usual for plants of *D. ruppianum* from the Iron Range or what plants of it from areas between there and Port Douglas are like. It does seem possible that *var. blackburnii* is a distinct variety worthy of recognition. I think that the stem habit Nicholls depicts and the Iron Range plant both indicate that *var. blackburnii* is not of hybrid origin.

Man-Made Seedlings: I have made the cross between *D. speciosum var. curvicaule* and *D. ruppianum*. I germinated the seed on sphagnum with a few root tips excised from the female parent. (*D. speciosum*). Germination and early growth were very rapid. The seedlings produced their first true roots (as distinct from initial root hairs) and up to two leaves within ten weeks of sowing. The first leaves of the seedlings are easy to distinguish from those of seedlings of *D. speciosum* at the same age. Those of the hybrid are thinner in texture, more oval and are distinctly pointed. In the spring of 1981 I made the reverse cross using *D. ruppianum forma magnificum* and *D. speciosum var. grandiflorum*. This seed is now germinating but it has been slower than the above-mentioned cross perhaps because *D. ruppianum* was the female parent and its seed is much smaller than that of *D. speciosum* and therefore on germinating, the seedlings were much smaller to start with.

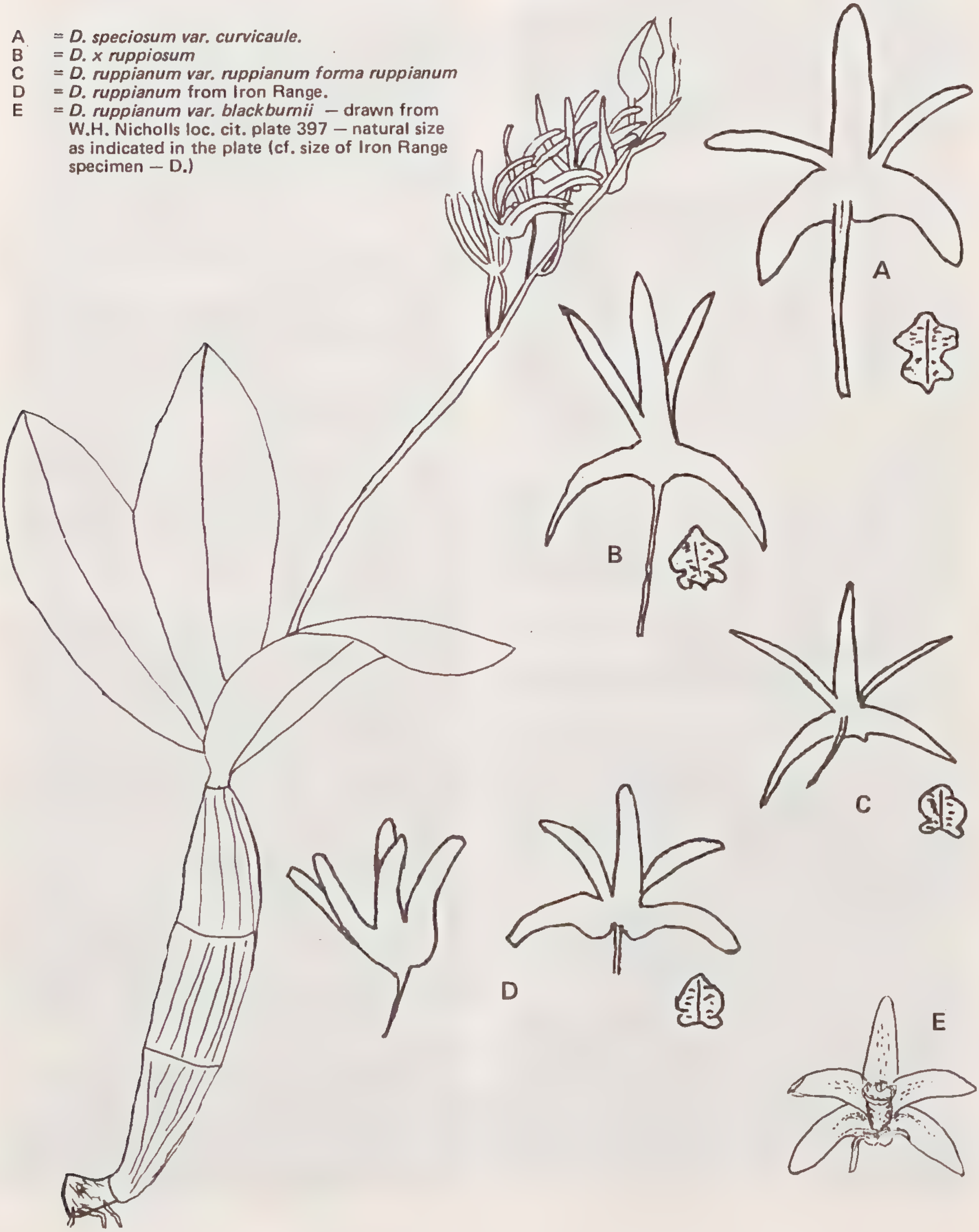
Horticultural Aspects: In my experience *D. x ruppiosum* seedlings are slow to mature like those of *D. speciosum.* The plant is compact and easy to grow. In this *D. speciosum* hybrid alone there is no reduction in the number of flowers. Since *D. ruppianum forma magnificum* in my experience, flowers after *D. speciosum* has finished I think that none of the natural plants of *D. x ruppiosum* has *D. ruppianum forma magnificum* as their parent. Despite this the hybrid is a showy plant. I expect that man-made examples of this hybrid using *forma magnificum* and other *D. speciosum* varieties will give some very attractive plants.

Acknowledgements: I would like to thank Mr J. Betts for preparing the latin description of *D. x ruppiosum* and Mr N. Stockton for allowing me to examine his plant.

8 January, 1982

Lot 6 Skinner Close
Avocado Heights
Woolgoolga 2456

A = *D. speciosum var. curvicaule.*
B = *D. x ruppiosum*
C = *D. ruppianum var. ruppianum forma ruppianum*
D = *D. ruppianum* from Iron Range.
E = *D. ruppianum var. blackburnii* — drawn from W.H. Nicholls loc. cit. plate 397 — natural size as indicated in the plate (cf. size of Iron Range specimen — D.)



AUSTRALIAN NATIVE ORCHID HYBRIDS

(New Registrations by the R.H.S. July 1981 and January 1982 — from lists in the Orchid Review *September 1981 and May 1982)*

HYBRID NAME	PARENTAGE	REGISTERED BY (originator in brackets)
DENDROBIUM		
Bluey	*x superbiens x* Peter Petersen	D'Bush Orchid Nursery (1981)
Blushing Rose	Bardo Rose x Suffusum [1]	D.M. Cannon (W. & J. Cannons) (1982)
Gracious Falcon	*x gracillimum x falcorostrum*	D.M. Cannon (1981)
PARACHILUS (= Sarcochilus x Pteroceras[2])		
Nicky	*Sarco. fitzgeraldii x Psarco[2] hirticalcar*	D.M. Cannon (1982)

Notes: 1. "Suffusum" (not italicised) is presumably used to denote an artificial hybrid rather than the natural hybrid *x suffusum.*

2. *"Psarco"* is the R.H.S. approved standard abbreviation for *"Parasarcochilus"*, a generic name now superceded by *Pteroceras* which is used in the ANOS "Checklist of Australian Native Orchid Hybrids" for purposes of botanical accuracy.

We shall be glad to publish any information or comments from the registrants or readers on the nature of these hybrids — Editor

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NEW NATIVE TERRESTRIAL ORCHID HYBRID — ADVANCE NOTICE

The following information was received on 27th April, 1982 from L.T. and M.K. Nesbitt (the registrants) that the R.H.S. registered on 5th March, 1982 **the first "greenhood" (*Pterostylis*) hybrid.**

HYBRID NAME	PARENTAGE	REGISTRANTS
Pterostylis Cutie	*baptistii x cucullata*	L.T. & M.K. Nesbitt (Originator: H. Goldsack)

The approved abbreviation for *"Pterostylis"* is to be "Ptst."

We hope to publish some descriptive details and illustrations of this hybrid as soon as they come to hand from Les Nesbitt.

SPRING SHOW NOTICES FOR 1982

ANOS Warringah and Sydney Groups (combined)

This will be the *Eighth Annual Spring Show* to be put on by these Groups at the Mona Vale Memorial Hall, Pittwater Road, Mona Vale. Benching will be on Friday, 10 September from noon to 10 p.m. It will be open to the public on Saturday 11 September (9 a.m. — 9 p.m.) and Sunday 12 September (10 a.m. — 4 p.m.). This is traditionally the biggest Native Orchid Species and Hybrid Show to be seen in Sydney each year. There will be 30 competitive sections and four championship medals. New Guinea native orchids will be included in the Display Section and there will be a special class for **"Best Interstate or N.S.W. Country Cut Flower Exhibit of Native Orchids by an ANOS Group or Member"**. The Show Schedule is being distributed with this issue of *The Orchadian.*

NATIVE ORCHID SOCIETY OF S.A. — FIRST SPRING SHOW, 1982

Saturday 18th September, 1982 noon — 8.00 p.m.
Sunday 19th September, 1982 noon — 5.00 p.m.
at the Goodwood Orphanage Education Centre, 181 Goodwood Road, Goodwood, S.A.

- Competitive Section for Australasian Native Orchids (7 classes for epiphytes and 7 for terrestrials)
- Non-competitive displays.
- Display of South Australian Orchids.
- Trading Table.
- Information booth.

Show judging by NOSSA judges. Five Championship Awards will be made but there will be no prize money.

ANOS Wollongong and District Group (N.S.W.)

Spring Show for 1982 will be held on 23, 24 and 25 September at the Regional Shopping Centre, Warrawong. Prospective exhibitors may contact the Hon. Secretary, Mrs E. Beileiter of 19 London St., Berkeley, 2506 for details.

ANOS Central Coast Group (N.S.W.)

Spring Show for 1982 will be held on Saturday 4 September (10 a.m. — 5 p.m.) at the Scout Hall, Gertrude Place, Gosford. For further details please contact Mrs D.B. Johnston, Hon. Secretary, at 158 Geoffrey Road, Chittaway Point, 2259.

ANOS Groups

- *Central Coast (N.S.W.) Group* held its Annual General Meeting on 14 April, 1982 and elected Mr Roy Gifford President and Mrs Dellas Johnston, of 158 Geoffrey Road, Chittaway Point, 2259, as Secretary (Tel.: (043) 88 1785).
- *Far North Coast (N.S.W.) Group* At the Annual General Meeting held on 18 March, 1982, Mr Dennis Lynch was elected President and Mr Graham Gamble was elected as Secretary. The Secretary's address is 14 Fischer Street, Goonellabah. Tel.: (066) 24 1023.
- *Warringah Group (Sydney)* has changed its monthly meeting place to the Thomas Vickers Memorial Hall at the Corner of Pitt & Grainger Roads, North Curl Curl.

A.N.O.S. ANNUAL GENERAL MEETING AND ELECTION OF COUNCIL FOR 1982-1983

Notice is hereby given that the Annual General Meeting of the Australasian Native Orchid Society will be held on SATURDAY 14th AUGUST 1982 at the Seminar Room in the new Herbarium Building, Royal Botanic Gardens, Sydney commencing at 10.00 a.m.

Agenda for the Annual General Meeting:

1. President's Report
2. Adoption of the Financial Statements and the Auditor's Report thereon.
3. Reading and adoption of the minutes for the immediate past Annual General Meeting.
4. Election of Office Bearers.
5. Notices of motion.
6. General Business (providing it concerns the general management of A.N.O.S. Council).

Nominations of Office Bearers
All positions in Council will be declared vacant and nominations are called for candidates to seek election to Council. Closing date for nominations is Monday 13th July, 1982. All candidates must be financial members of A.N.O.S. The method of voting will be by show of hands and by signed proxy. Proxy votes must be as prescribed in section 53 of the Constitution of A.N.O.S. and must reach the Secretary not less than 48 hours before the meeting.
By order of the Council.

B.J. Butler,
Honorary Secretary.

Some good reasons for attending the ANOS AGM on 14 August, 1982.

- *The venue.* This is a modern Seminar Room in the new building for the Herbarium at the Royal Botanic Gardens, Sydney.
- *The meeting* will afford an opportunity to meet the new Councillors of ANOS and to discuss the new projects planned for the coming year.
- *After the meeting*, conducted tours of the glass-houses (including the pyramid house) will be available. We suggest that members take luncheon at the Royal Botanic Gardens Restaurant prior to visiting the glasshouses. In order to facilitate bookings for this the Secretary would appreciate advice from members a week or so before the meeting.

Please Note: that access to the new building is through a new entrance from Mrs Macquarie's Road (where cars may be parked) and **not** via the normal public entrances to the Gardens.

The AGM this year provides the opportunity to learn more about ANOS plans, to get together with other members and to find out what our historic Gardens have to offer the public now and in the future.

RENEWAL OF SUBSCRIPTIONS

ANOS membership fees are now due for renewal. Membership fees are $(Aus.)12.50. If you have sent your cheque for the 1982-1983 year please ignore the notice inside this issue. Otherwise send your cheque to:

ANOS
C/- B. & C. Mailing Service Pty. Ltd.,
Box 4142 G.P.O.
SYDNEY. N.S.W. 2000.

OVERSEAS SUBSCRIBERS PLEASE NOTE

All amounts are expressed in Australian Dollars. Any other currency is not acceptable. **Remit by Bank Draft or International Money Order.** Personal cheques cannot be accepted and will be returned.
Unless you specify otherwise, surface mail is used.

FOR AIRMAIL ADD:
N.Z. & P.N.G. $A3.40; India & Japan $A5.40; U.S.A. & Canada $A6.60; Africa, U.K. & Europe $A7.40.

ALL MEMBERS. Please remit your renewal by return mail. Late payments severely limit the ANOS budget.

DONATIONS TO *THE ORCHADIAN* COLOUR FUND

Acting upon many suggestions made in reply to the questionnaire-survey conducted by ANOS during 1981, Council has decided to set up a Colour Trust Fund comprising optional donations from members.

It is estimated that the new subscription fee of $12.50 p.a. will do no more than maintain *The Orchadian* in its present format and size without enabling us to reproduce illustrations in colour — so necessary for the full appreciation of orchid flowers. To achieve colour reproduction of sufficient quality we shall need an average donation of $2.50 at least from every subscriber; but Council feels that, as the donation should be optional very many donors will need to give much more than the average figure if the Fund is to achieve its objective within a reasonable time. Council's target for the year 1982-1983 is $1,500.

If subscribers send donations for the Colour Fund along with their Annual Subscriptions due in July, 1982, the Secretary should be in a position to report on the feasibility of colour illustration during the forthcoming year.

ANOS SURVEY

Winners of the Lucky Draw

1st: Mrs B. Murphy of Hawthorn, Victoria.

2nd: Mrs L.J. Thomas of Mitchell Park, S.A.

As Mrs Murphy was first drawn she was given the opportunity to choose between terrestrial and epiphytic orchid plants for her prize. She chose epiphytes.

Orchids were supplied by Double 'U' Orchids, Elanora Heights, N.S.W. and by L.T. and M.K. Nesbitt, Cambridge Park, S.A.

Who's Who

THE AUSTRALASIAN NATIVE ORCHID SOCIETY OFFICERS AND GROUP CONTACTS:

A.N.O.S. Council:
President: N. Hilliger; Vice-Presidents: K. Edwards and E. Husted; Secretary: B. Butler; Asst. Secretary: M. Harrison; Editor: J.J. Betts; Asst. Editor: P. Weston; Councillors: F. Martin, G. Wells, D. McAlpine, I. Palmer.

A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

NEW SOUTH WALES

- *Sydney Group:* Tel.: (02) 53 5956
  Meets 8 p.m. 2nd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099
  Meets 8 p.m. 2nd Thursday, the Thomas Vickers Memorial Hall, Cnr. Pitt and Grainger Rds, North Curl Curl.
- *Newcastle Group:* Tel.: 48 9109 — Meets 4th Wednesday, John Young Community Hall, Thomas Street, Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- *Hastings Valley Group:* Tel.: (065) 85 6150 — Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Wauchope.
- *Central Coast Group:* Tel.: Secretary (043) 88 1785
  Meets 7.30 p.m. 2nd Wednesday at the Baptist Church Hall, Cnr. York & Frederick Streets, East Gosford.
- *Far North Coast Group:* Secretary: Graham Gamble Tel.: (066) 24 1023
  Meets 8 p.m. 3rd Thursday at Ballina Bowling Club, Cherry Street, Ballina.

VICTORIA

- *Victorian Group:* Tel.: (03) 754 6585
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- *Darling Downs Group:* Secretary: Mrs J. Leyden, 66 Mort Street, Toowoomba, 4350. Tel.: (076) 34 2813.
  Meets 7.30 p.m. 3rd Friday at the Auditorium of the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- *Native Orchid Society of Queensland (Affiliated):* c/- P.O. Box 159, Broadway, Qld. 4000.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

SOUTH AUSTRALIA

- *Native Orchid Society of South Australia (Affiliated):* Secretary: E.R. Hargraeves, 1 Halmon Avenue, Everard Park, 5035 Tel.: (08) 293 2471 or 297 3724 — Meets 4th Tuesday, St.Matthew's Hall, 67 Bridge St., Kensington.

WESTERN AUSTRALIA

- *W.A. Native Orchid Study and Conservation Group (Inc.) (Affiliated):* Tel.: (09) 337 9614
  Meets 3rd Wednesday at the Department of Agriculture's Film Room, Jarrah Road, South Perth.

NORTHERN TERRITORY

- *The Orchid Society of the Northern Territory (Affiliated):* Secretary: Mrs G. Heinemann, Tel.: 85 4624,
  P.O. Box 38493, Winnellie, N.T. 5789

AFFILIATED SOCIETIES

NEW SOUTH WALES
Berowra & District Orchid Society
Blue Mountains & District Orchid Society (Tel: (047) 21 8126 Mr K. Edwards)
Corrimal Orchid Society
Cumberland Orchid Circle
Eastwood & District Orchid Circle
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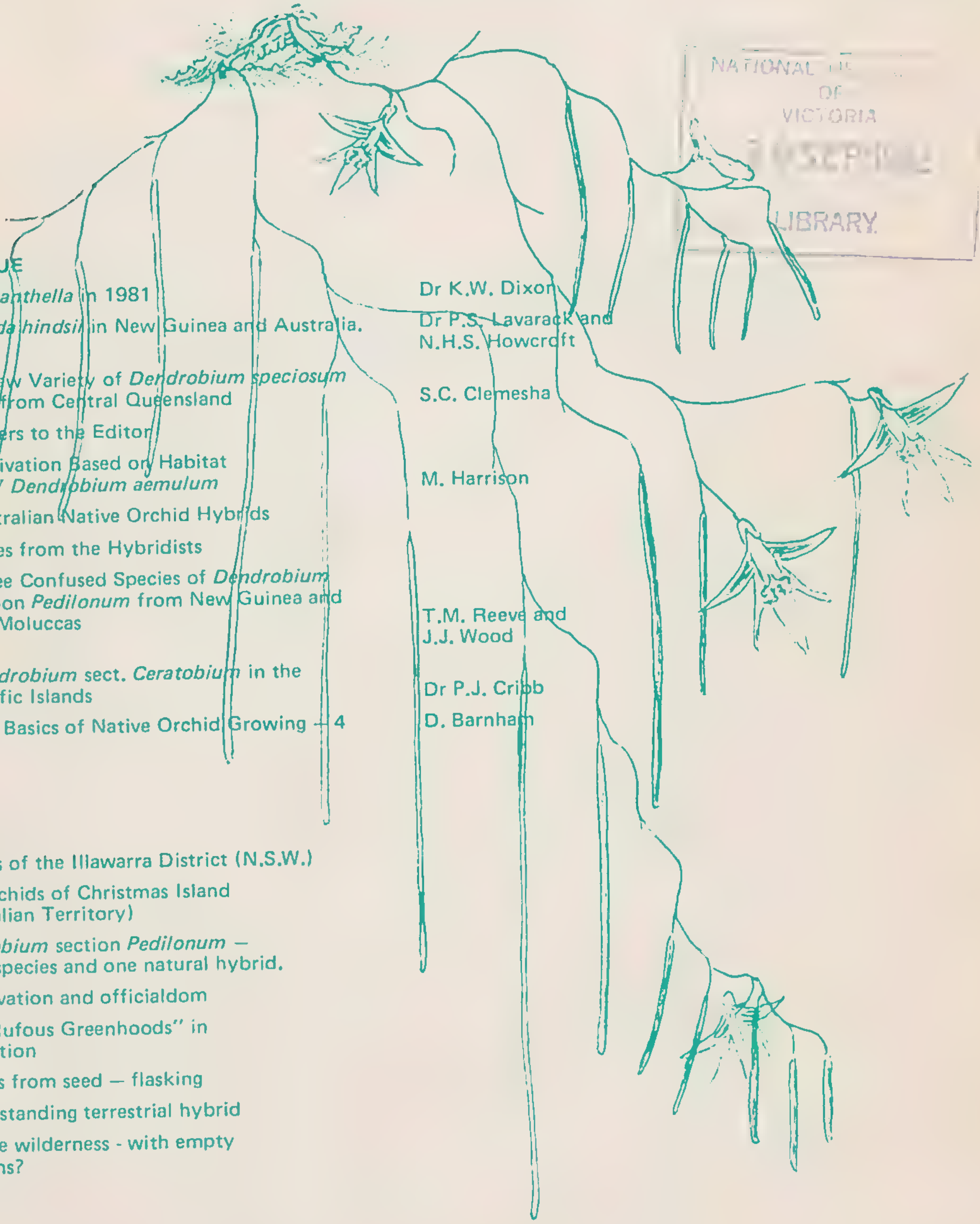

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EDITORIAL

Spring comes round again. Ah, *Primavera!* The shadehouse and the shows are bountiful with buds and blooms to delight the senses. But it is the native orchids that give us the strongest signals. Their scent alone justifies our over-winter wait. It is "the *juvescence* of the year" (to steal a word coined by T.S. Eliot in his *Gerontion*) — the time that delights and gratifies us.

(Steady on, Mr Editor. This is no place for poetry. It is the time of year when subscribers need to be stirred to bring forth cheques — cold, hard cash — to keep The Orchadian *coming! Your notes in the June issue have actually brought in about 50% of members' subscriptions — without even posting any annual notices! Could you please stir up the rest of them and save some of our postage bill?)*

Ignore the above parenthesis if you are among the blessed 50%. If not, prepare to read your last issue of *The Orchadian*. Stir yourself.

ANOS Council, like Spring, stirs again after its Annual General Meeting in August. Six members (including your Editor and two Vice-Presidents) were unable to continue as Councillors. Brex Butler, a driving force during the past year, resigned as Hon. Secretary but fortunately continues as a Councillor. He is succeeded by Michael Harrison who is now well known to every one of our members who read *The Orchadian* and enjoy his series of articles relating habitat conditions to practical cultivation needs. For other changes in Council please see the "Who's Who" page in this issue.

I am told that the response from individual members to Council's request for donations to a trust fund for Colour in *The Orchadian* has been good. So far, one ANOS Group has made a donation combined with a "speaker's fee" for a talk given by Councillor Garry Wells. For this we are indebted both to the Hastings Valley Group and to Garry Wells — who hopes this will set a precedent for others. I am not in a position to acknowledge all donations so far received but I expect that ANOS Council will do so officially in due course. The same applies to the results of the questionnaire-survey. Mr Butler gave a verbal summary at the AGM but this, of course did not reach most of our readers.

Meanwhile, without appearing to be churlish (I hope) I must ask donors and non-donors alike **not** to send subscription cheques to me personally. It is very pleasant to get such letters but they have to be transmitted, with consequent delay, to the ANOS address (see inside front cover). Similarly it is unwise to send **editorial** matters — especially articles and **letters for publication** — to the ANOS address instead of my home address. The delay in this case can defer publication quite disastrously.

We have managed an extra two pages of print just for this quarter; thanks to David Cannon's two-page colour advertisement. His particular response to the Colour Trust Fund has been to make a substantial donation including a high percentage of profits from the advertised "special offer" plants to be sold at the ANOS Spring Show at Mona Vale (September 11 and 12). I call this tangible support.

FEEDBACK AND FOLLOW-UP

- Is this feedback really worthwhile? Should we dispense with it? One reader dislikes editorial comment while another specifically asks for more of it. One should not be guided entirely by just a few letters. A good sample of opinion obtained by the ANOS questionnaire-survey earlier this year would be a much better guide; and I look forward to getting the results and a bit of follow-up.
- Some journals have no editorial page at all. Why should we? Shortage of space may well determine this question eventually and give me an easy way out. "If in doubt, do nothing" may be the best policy. But while I am editing I am afraid I cannot shake off the conviction that an editor should be concerned not only with providing a vehicle for contributors who have something worthwhile to say but also with expressing his own opinions and criticism where appropriate. The editorial page is for this; and the "Letters to the Editor" section provides the same opportunity for every reader with something to say.
- It is now a year since the Index to Volume 6 was supplied to all subscribers. There has been no comment whatever. ("I shot an arrow into the air . . . It fell to earth I know not where".) It was expensive in time, effort and money and was issued free. The Hybrid Checklist (2nd edition) was published at the same time, costs being covered by a charge of $1.50 including postage. By putting this price on it at least we know what the demand is. Perhaps there is a lesson here?
- The Question-Box idea (see the June issue) floats on like a lead balloon . . . No feedback.
- How about Conservation? Who will kick the "Connie" can? ANOS Council is stirring this pot a little; but easy solutions are obviously not to be found. One of the ANOS moves involved a possible embargo by members on the sale of *Dendrobium falcorostrum* which is obviously being taken from the wild in huge clumps and crudely chopped into small pieces for sale. A little bird told me (so I cannot vouch for the truth of it) that a southern reaction to the suggested embargo was: "Why pick on *D. falcorostrum?*" Why indeed? *(Enough of that, Mr Editor! You're rocking the boat".)* If I were **not** an editor perhaps I'd feel free to write a little article for the general public — in the popular press, of course — about what happens when a happy band of orchid-lovers (not "collectors" you understand) goes out for a field day. I could call it, say, "Greed and Lust in the Wild" or "A Beautiful Boot-full to Boost the Club's Funds" or what about "Saved from the Ravenous Bandicoots"?

Rhizanthella in 1981

by K.W. Dixon*

With preparations well underway for the 1982 Underground Orchid hunting season it is an opportune time to recap and reflect on the successes and the near-misses of the 1981 season.

The project to investigate the status and biology of *Rhizanthella gardneri* officially began in February 1981. This was against a backdrop which in recent times had seen the orchid collected from only two localities — the 1979 rediscovery site on a farming property near Munglinup and the second, from the central wheatbelt town of Babakin in 1980. Therefore, one of the aims of the programme for the first year of the project was to assess the *Rhizanthella* population size in the Babakin town reserve and to seek out new sites for the orchid in nearby reserves.

Discovery of new sites:

With these objectives in mind, the Western Australian Native Orchid Study and Conservation Group (WANOSCG) set out to spend a weekend in early July seeking the orchid in and around the 1980 Babakin site. The unprecedented success of the first day was reflected in the discovery of seven flowering heads. Although Babakin had over 50mm of rainfall on the first night, spirits were not dampened and by the following day another three plants had been uncovered; two of these discoveries being from a totally new site some 10 km west of Babakin. Both areas were recommended to the Western Australian Department of Fisheries and Wildlife for vesting as "A" class reserves and to date the latter area has now been upgraded to "A" class.

Several other trips were organised over the ensuing two months with varying amounts of success, even though there was always a good turn-out of Study Group members. One such trip to the Oldfield river was successful in finding three flowering heads in a large reserve situated north of the Ravensthorpe-Esperance road. Again the Department of Fisheries and Wildlife have been approached with a view to conserving these new finds in their pristine state. These finds represent the only examples of the orchid that have been found on crown land near the 1979 rediscovery site at Munglinup. The plants are therefore assured of a secure habitat if proposals to upgrade the areas to "A" class reserves are adopted by the Department of Fisheries and Wildlife. Later trips netted five healthy specimens from yet another new locality, and along with other finds at the Babakin site brought to 49 the total number of plants found in 1981.

Experimental studies:

Limited non-destructive biological experiments were undertaken with the aim of: (1) understanding natural pollinating agents and success of pollination; (2) elucidating plant nutrition and the orchid's seasonal growth cycle and establishing whether there is a nutritional link between *Rhizanthella* and surrounding vegetation, particularly the close plant-associate of the orchid, the Broom Honey Myrtle (*Melaleuca uncinata*); (3) investigating the agent(s) of seed dissemination and the success of seedling germination and establishment under natural and artificial conditions.

Rhizanthella does not have the apparatus possessed by other green-leaved plants to create from sunlight and gaseous carbon dioxide the carbohydrates necessary for sustained plant growth. Nonetheless, examination of tubers of *Rhizanthella* show the structure to be rich in starch and capable of rapid growth. Where does this orchid derive its nutritional and energetic requirements? One solution lies with the close association that exists between the orchid and the Broom Honey Myrtle. The orchid through the agency of a fungus may be tapping the nutrients, including carbohydrates, that circulate through the root system of the *Melaleuca*. Evidence for this has come from collaborative studies with Dr J. Warcup of the Waite Institute in South Australia. He has found the orchid to possess a fungus which enters and leaves the orchid stem via long hair-like structures scattered on the surface of the tuber. The fungal threads have yet to be traced from the orchid to the *Melaleuca* or indeed other vegetation that may be associated with the *Melaleuca*. However, superficially similar fungal organisms to those of the orchid have been found in the roots of *Melaleuca uncinata*. In addition, these fungal organisms have been shown to facilitate the germination of South Australian species of *Caladenia* and *Prasophyllum*, and therefore cannot be ruled out as being nutritionally important to adult and seedling *Rhizanthella*. This type of symbiosis is not unknown in non-photosynthetic orchids and has been demonstrated for *Gastrodia sesamoides* and *Corybas cryptanthus*.

Investigations into the pollination strategies has indicated that a wide variety of pollination vectors may be involved. The possibilities range from wasps to fungivorous gnats (minute fungus-eating insects) and even, although unlikely, termites. The success of natural pollination was gauged by comparing seed set between artificially pollinated flowers and those left undisturbed. Surprisingly it was found that lowest seed set was observed where plants were left undisturbed (< 25% of all flowers developed viable seeds). On the other hand, artificially pollinated flowers and particularly plants where the flowering heads were partially exposed for several weeks and not subjected to artificial pollination had remarkably high levels of seed set (> 80% of all flowers developed viable seed). Thus esposure of the plant may provide a variety of organisms with potential access to the flowers — a stiuation which would not normally occur if the flowering heads remained covered.

For *Rhizanthella* there are many problems associated with the dissemination of its seed from an indehiscent, fleshy, pod buried under a centimeter or so of litter and soil. One possible mechanism for seed dissemination is that an animal, possibly a small marsupial, digs up and consumes the flowering head containing the ripe seed capsules. Later the seeds, which are protected by a seed coat much thicker than seed coats found in other orchids are passed out with the faeces. Besides the food-lure provided by the fleshy capsules and the faint yet sweet odour emitted by the ripe capsules, further evidence for this method of dissemination is provided by the coincidental and prolific flowering of the *Melaleuca* (a potential nectar and flower food base for a marsupial) with the timing of seed maturity. Pit trapping exercises to ascertain the diversity and number of small animals in the natural habitat have so far proved unsuccessful. This exercise will be repeated in 1982. More evidence of the possible role of marsupials in seed dissemination was provided by artificial feeding of seed pods to caged mammals. Using species of native rodent not uncommon in the areas where *Rhizanthella* occurs, an experiment was designed which demonstrated that under laboratory conditions, these rodents will excavate and consume mature flowering heads of the orchid. Furthermore, the seeds, in an intact and viable form were seen to be voided with the faeces. Whether this sequence occurs in natural situations and fate of the seed (and seedlings?) once in the faeces, remain unanswered questions. However, some attempts will be made this season to examine seed germination using the *Rhizanthella* "salted" faeces generated during the above expriments. This latter experiment provides the greatest promise of success as attempts to germinate untreated seed under aseptic conditions on a range of agar media has so far proven unsuccessful.

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* **Dr Dixon is a post-doctoral research fellow, funded by World Wildlife Fund Australia, to investigate the status of the Underground Orchid (*Rhizanthella gardneri*).**

In conclusion the studies so far represent the first deliberate and successful attempts at finding the orchid, even though 1200 man-hours of effort returned 49 plants. For 1982 it is envisaged that field exercises will concentrate on consolidating all populations discovered in 1981 and extending the survey for the orchid to northern (Geraldton) and southern (Esperance) regions of the state.

13 April, 1982 **University of Western Australia**

(On 29 May, 1982, "The Australian" reported under headline "Satellite Spots Elusive Orchid" that more than 100 underground orchids had been detected by use of the landsat satellite orbiting 900 km above Earth. Landsat transmitted coloured map images enabling the research team at the Univeristy of W.A. to pinpoint the areas where "honeymyrtle" is most prolific — Ed.)

Vanda hindsii Lindley in New Guinea and Australia

by P.S. Lavarack* and N.H.S. Howcroft**

INTRODUCTION

The genus *Vanda* occurs in the area from India to New Guinea and northern Australia. *Vanda whiteana* D. Herbert and S.T. Blake, the Australian species, was described in 1951 from a specimen collected in the McIlwraith Range on Cape York Peninsula, while *Vanda hindsii* Lindley was described in 1843 from a plant collected in New Guinea. In 1901 J.J. Smith described *Vanda truncata* from a plant collected at Merauke in the south eastern corner of what is now Irian Jaya. Schlechter (1913) subsequently considered *V. truncata* to be conspecific with *V. hindsii* a view which has been generally accepted since, although it is interesting to note that van Bodegom (1973) retains J.J. Smith's name.

For some time the possibility that *V. whiteana* may be conspecific with *V. hindsii* has been a topic of conversation among Australian orchid fanciers. Womersley and Millar (1965) also commented in this possibility. More formal investigations have led the present authors to the conclusion that these species should indeed be considered to be conspecific:

Vanda hindsii Lindley in Hook J. Bot. II (1843) 237. Type: New Guinea, Mr. Hind. (K)!

V. truncata J.J. Smith Bull. Dep. Agr. Ind. Neerl., XIX (1908) 38 and Nova Guinea VII (1910) 121, t. XLI, fig. 137.

V. whiteana D. Herbert and S.T. Blake, Qd. Nat. 14(3) (1951) 57-60 and Dockr., Aust. Indig. Orch. 1 (1969) 680-681. Type: Cook Distr. near Coen, L.J. Wassell, 4-11-1950 (BRI)!

Discussion

Over the last ten years the two authors, working separately in New Guinea (N. Howcroft) and in Cape York Peninsula (P. Lavarack) became convinced that the two populations under consideration did in fact represent one species. This opinion was confirmed by an exchange of material and by a study of the Type specimens which one author (P. Lavarack) was able to undertake recently at Kew and Brisbane.

Herbert and Blake, in describing *V. whiteana*, commented that "Its nearest ally appears to be *V. hindsii* Lindl. (*V. truncata* J.J. Sm.) from New Guinea, but this has spotted young leaves, less strongly falcate petals, shorter column and a paler ground colour".

These proposed differences will now be considered: Young plants from Cape York do occasionally show spotted young leaves which is a trivial difference in any case. A comparison of the petals of the two taxa revealed no consistent differences in the petals, any apparent differences are usually due to the difficulty involved in flattening out the segments so that the true shape is apparent. Some specimens showed a tendency for the margins of the floral segments to inroll as they aged and this may also be responsible for apparent differences in shape. The column lengths are compared in Table 1 and no significant difference is apparent between New Guinea and Australian material. The difference in "ground colour" was not apparent to the present authors. The only differences detected between specimens from the two regions lay in the length of the inflorescence and number of flowers. New Guinea specimens tended to have a longer infloresence (26-32 cm compared to 15-20 cm for Australian specimens) and a few more flowers (10-14 compared to 6-13).

Comparisons were also made of the ridges on the labellum, the apex of the labellum and the width of the column (see Table 1). These indicated that both New Guinea and Australian specimens were similar in having five ribs on the labellum consisting of three prominent and two less obvious ribs. The apex of the labellum was predominantly bilobed on all specimens studied with one exception. The leaf tips were also examined and the two taxa under consideration were found to have an unequally lobed apex, usually convex or rounded on at least one side (see Fig. 2A, B).

During the course of the study of the New Guinea material it became apparent that some specimens were significantly different in some features. These specimens had a much broader column, a labellum of different shape with three ribs and a straight apex; shorter inflorescence with fewer (2-5) flowers. It appears likely that these specimens represent a separate species either undescribed or possibly previously recorded from the islands to the west of New Guinea. In Table 1 the last specimen listed is an example of this taxon.

Vanda hindsii and this possible second New Guinea species belong to a complex group of species occurring largely in the Indonesian Islands. Other species more or less closely related include *V. helvola* Blume, *V. furva* Lindley, *V. devoogtii* J.J. Smith and possibly *V. merrillii* Ames and Quisumbing. Detailed work would be necessary to establish whether any of these are conspecific with *V. hindsii*. The only name which predates *V. hindsii* is *V. furva* which, from the illustrations (J.J. Smith 1938), appears more closely related to the second New Guinea species mentioned above than to *V. hindsii.*

Distribution

V. hindsii Lindley, as it is now recognized, is widespread in New Guinea at altitudes of sea level to 1,000 m. It is also recorded from New Britain. In Australia it occurs in the area between the Stewart and Pascoe Rivers and west to about Coen. It occurs from sea level to about 600 m. Figure 3 indicates where live specimens and herbarium material have been collected.

Specimens Studied:

Queensland: Cook Distr: near Coen, Nov. 1950, *L.J. Wassell* (BRI); Tozer's Gap, Sept. 1976, *P. Lavarack* (BRI); Massy Ck., Nov. 1980, *P. Lavarack* 3093 (Spirit, BRI); Massy Ck., Nov. 1980, *J. Clarkson* 3605 (BRI); cult. ex Lankelly Ck., Dec. 1980, *P. Lavarack* 3094, (Spirit, BRI); cult. ex Cape York Pen., Nov. 1980, *P. Lavarack* 3058 (Spirit, BRI).

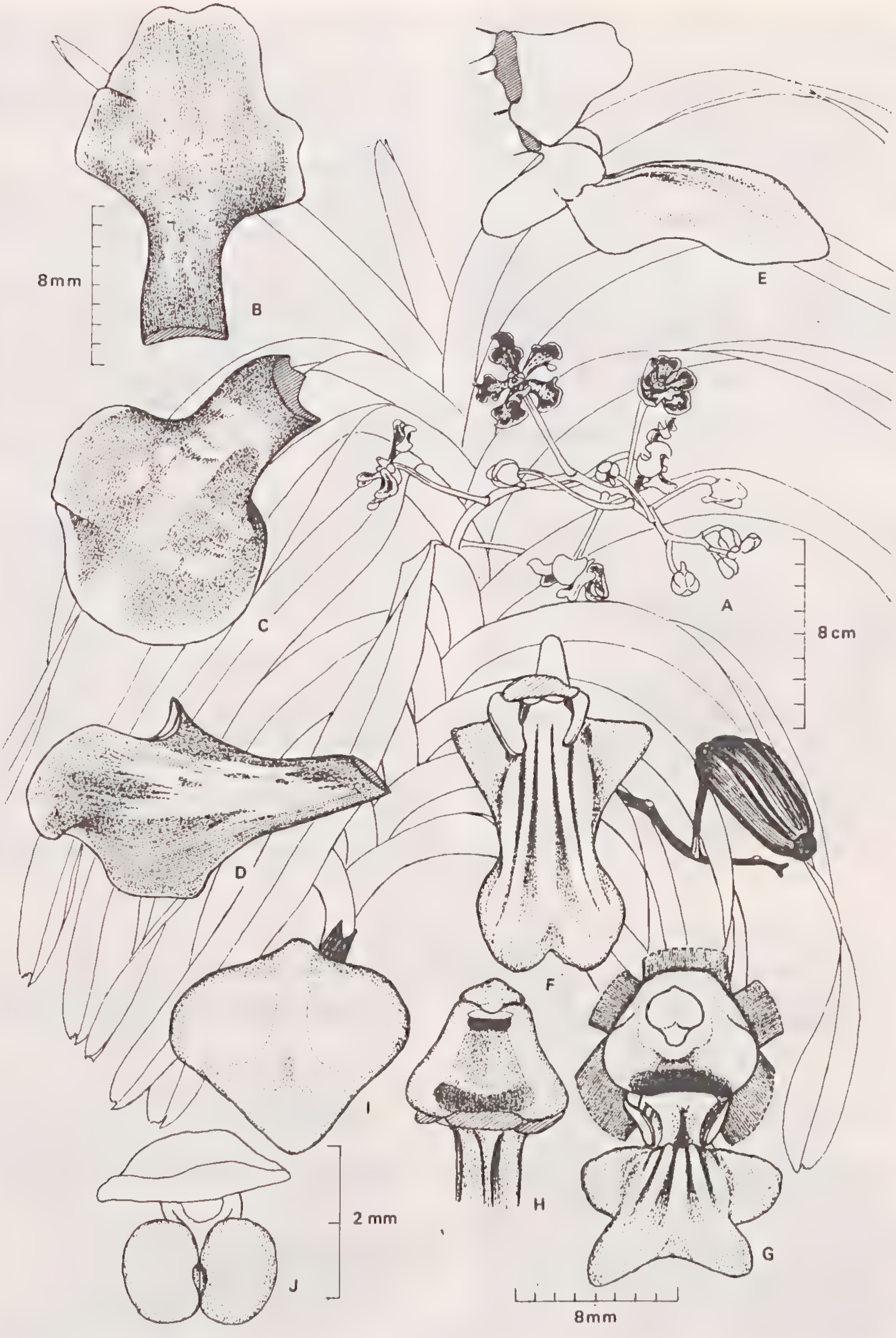


Figure 1. *Vanda hindsii* Lindley.
From a plant collected at Bulolo, Papua New Guinea (N.H. 119)

Drawing: N.H.S. Howcroft.

New Guinea: *Mr. Hind* (K); Jun. 1908, *R. Schlechter* 17824 (K); cult. Nov. 1980, *P. Lavarack*, 3059 (Spirit, BRI); cult. ex Baiyer Riv., Dec. 1980, *P. Lavarack* 3095 (Spirit, BRI); Koitaki, Apr. 1935, *Carr* 10019 (LAE); Lower Fly R., Oct. 1936, *L.J. Brass* 8123 (LAE); Baiyer R., July 1968, *A.N. Millar* NGF 37622 (LAE); Watut, *A.N. Millar* NGF 37622 (LAE); Nanti; Watut, Nov. 1968, *H. Streimann* 44346 (LAE); Patep, Feb. 1954, *A.N. Millar* NGF 23310 (LAE); Patep, May 1954, *A.N. Millar* NGF 5266 (LAE).

Notes

In Australia this species is usually epiphytic but quite frequently occurs on granite rocks or in open or partially shaded positions. Older plants are frequently much branched and large clumps are occasionally encountered, particularly on granite boulders. The flowering period in Australia is rather erratic, with a concentration on the period from October to January, while in New Guinea plants frequently flower several times a year, i.e. January, March and October. The flowers of *Vanda hindsii* have a faint pleasant perfume. In Papua New Guinea bees of the genus Anthophora (Amegilla) have been observed to visit the flowers frequently and remove the pollinia (attached to the thorax). They appear to be most active from daylight to mid morning when the perfume is easily detected from a distance.

References

Bodegom van (1973), Enige Orchideen van West Niew Guinea. Technische Hogeschool Twente.

Herbert, D.A. and Blake, S.T. (1951), A New Orchid from North Queensland, Qd. Nat. 14(3): 57-60.

Schlechter, R. (1913), Repert. Spec. Nov. Regni Veg. Beih. 1: 970-971.

Smith, J.J. (1910), Nova Guinea 8: 121, t. XLI, fig. 137.

Smith, J.J. (1938), Bull. Jard. Bot. Buiten. Ser. III, Suppl. Vol. III. Tab. 113, fig. I.

Womersley, J.S. and Millar, A.N. (1965). Aust. Orchid Rev. 30(3): 131-132.

***National Parks and Wildlife Service,**
Pallarenda, Queensland, 4810.

****Forestry Research Station, D.P.I.,**
Bulolo, Papua New Guinea.

April, 1982

Table 1 — Comparison: Australian and New Guinea Species.

Origin	Number	Column Length (mm)	Column Width (mm)	No. of ribs on Labellum	Apex of Labellum
Australia	P.S.L. 3094	5	7	5	bilobed
Australia	J.C. 3605	7	8	5	bilobed
Australia	P.S.L. 3058	6	8	5	bilobed
Australia	P.S.L. 3093	6	8	5	bilobed
Australia	(Type of *V. whiteana*)	7	5	5	bilobed
New Guinea	P.S.L. 3059	7	8	5	bilobed
New Guinea	P.S.L. 3095	8	9	3 (+2 indistinct)	bilobed
New Guinea	(N.H. collection)	6	9	5	bilobed
New Guinea	(Type of *V. hindsii*)	6	—	5	bilobed
New Guinea	(N.H. collection)	7	12	3	straight

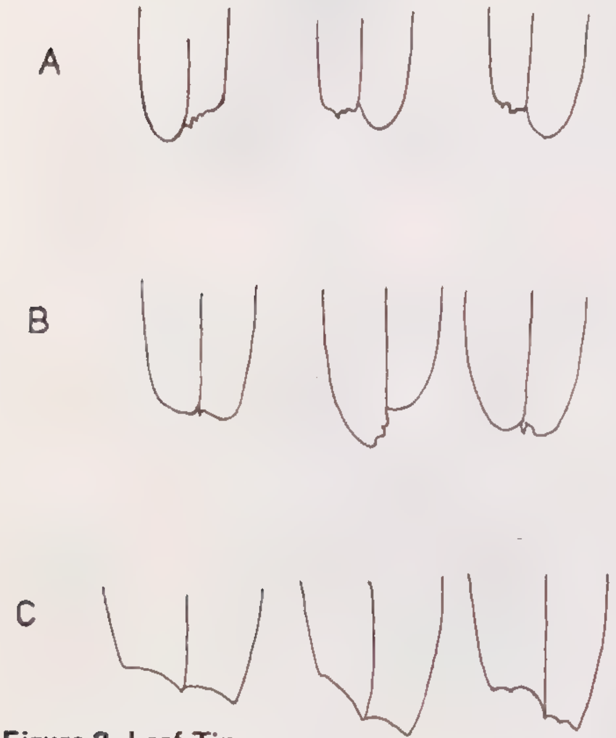


Figure 2. Leaf Tips.
A *Vanda hindsii* ex Cape York.
B *Vanda hindsii* (left to right): Wau, Bulolo, Finisterres
C *Vanda sp.* (left to right): Wau, Bulolo, Warengoi (East New Britain).

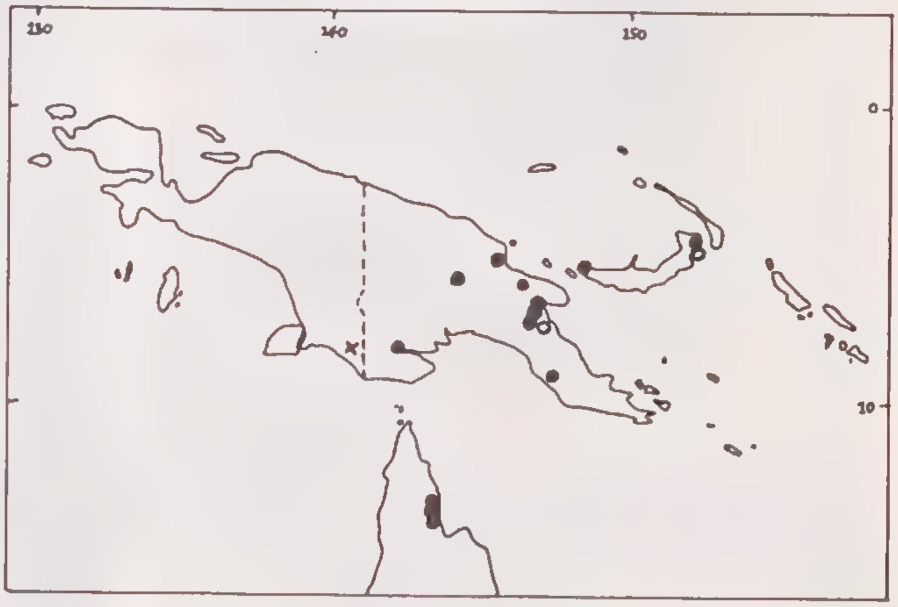


Figure 3. Distribution of *Vanda hindsii.*
● *Vanda hindsii* Lindley
× *Vanda truncata* J.J. Smith
□ *Vanda* sp.

A New Variety of *Dendrobium speciosum* Sm. from Central Queensland

by S.C. Clemesha

Summary.

In this paper *D. speciosum* var. *capricornicum* is described as a new variety. Its relationship to other varieties and its behaviour in cultivation are then discussed.

In *The Orchadian* Vol. 6 No. 11 (March, 1981) I published "A Review of *Dendrobium speciosum* Sm." and on page 255 I discussed small plants from near Rockhampton under the heading "A Dwarf Race" (of *D. speciosum* Sm. var. *grandiflorum* F.M. Bail). Specimen "D" on page 254 illustrated an example of this. For reasons I give later in this paper I now consider this race constitutes a distinct variety as described below.

Dendrobium speciosum Sm. var. *capricornicum* S.C. Clemesha var. nov.

Haec varietas *D. specioso* Sm. var. *grandifloro* F.M. Bail. similis sed pseudobulbis brevioribus multo (7-15 cm. x 2-2.5 cm); foliis parvioribus et durioribus 7-12 cm x 2.5-3.8 cm; racemis erectioribus; rhachidi pedunculo aequanti longitudine; labello maiore ex comparatione 1/3-½ longitudinis tepalorum ceterorum contra labbelum var. *grandiflori* ¼ longitudinis tepalorum ceterorum.

Type.

From a plant collected and cultivated by S. Clemesha. This was collected with proper authority near a disused quarry on an old volcanic plug about 8 km inland from Yeppoon, Queensland, in May, 1978. It flowered in cultivation on July 24, 1981. The Type specimen is in the Queensland Herbarium and a specimen taken from the same plant (when it flowered in the following year) is in the National Herbarium of N.S.W.

This variety is similar to *D. speciosum* Sm. var. *grandiflorum* F.M. Bail. but is smaller in all its parts. It is entirely, as far as is known, a rock-growing plant. Pseudobulbs 7-15 cm x 2-2.5 cm, nearly even in diameter throughout or slightly tapered distally and smooth except when old. Leaves 2-4, very hard and more erect than in var. *grandiflorum*, narrow to broadly lanceolate, 7-12 cm x 2.5-3.8 cm. Racemes 1-2 in (cultivated) plants seen, (there were no living flowers on the plants when initially seen in their natural habitat) about 36 cm long, the peduncle making up half of this length. Flowers 35 or more, white with purple markings on the labellum. Lateral sepals 2 cm x 0.5 cm, curved and tapered as in var. *grandiflorum* but shorter and thicker. Dorsal sepals similar in size and shape but less curved and tapered; petals 2 x 0.2 cm; labellum 0.8-1 cm x 0.5 cm when pressed flat, 3-lobed, mid-lobe 0.5 x 0.5 cm and rather obtuse; column 0.5 cm tall.

Distribution

I have examined cultivated plants of this variety from the Carnarvon Gorge (sandstone rockfaces in the narrow gorges) and Blackdown Tableland (sandstone rockfaces near creeks and waterfalls) to Rockhampton (rockfaces near Bouldercombe), Yeppoon and Byfield where they occur on rockfaces of ranges and old volcanic plugs. All known habitats are much drier than the habitat of var. *grandiflorum*, except the Byfield Range where the rainfall is almost twice that of Yeppoon. The plants from the Byfield Range, however, differ little, if at all, from those near Rockhampton (i.e. the Type locality, Berserker Range and Yeppoon).

Notes.

The epithet "*capricornicum*" refers to the Tropic of Capricorn since the entire distribution of the variety is close to that latitude.

The reasons I formerly treated var. *capricornicum* as a dwarf race of var. *grandiflorum* are:—

(1) Its flowers resemble that variety.

(2) At the time I prepared my paper I had seen only two specimens — a live one in cultivation and a specimen in the N.S.W. National Herbarium. Both were from the Blackdown Tableland.

(3) Plants in my cultivated collection which were unreliably reported to be from near Gladstone, had a habit suggestive of being intermediate between var. *grandiflorum* and var. *capricornicum*. These plants since have flowered and the flowers have been larger than is usual for var. *grandiflorum* and very thick in texture. A characteristic of var. *capricornicum* is that the flowers are smaller.

Var. *capricornicum* and var. *grandiflorum* differ as follows:

Comparative Table 1

Var. *grandiflorum* (Fig. 1)	Var. *capricornicum* (Photo, Fig. 2)
Stems commonly 40 or more cm tall, rarely as short as 25 cm but, when so, very robust — about 3 cm thick.	**Stems.** 7-15 cm tall and 2-2.5 cm thick, never becoming as tall or as thick as even the smallest examples of var. *grandiflorum*.
Leaves — Usually larger in proportion to the stems, 15-30 cm long and thin in texture.	**Leaves** small in proportion to the stems, 7-12 cm long and very hard and rigid in texture.
Peduncle short, only about ¼ (or less) the total length of the raceme.	**Peduncle** up to half the total length of the raceme. (see Fig. 3)
Flowers cream or yellow; never white. Labellum only about ¼ the length of the other tepals when pressed flat.	**Flowers** white except in inland areas where cream or yellow. Sepals and petals broader (in proportion to their length) than var. *grandiflorum*. Labellum when pressed flat 1/3 to ½ the length of the other tepals.
Plant moderately shade tolerant as regards flowering.	Plant never flowering when in shade. (In the author's experience, even semi-shade prevents flowering).
Habitat — Rainforests and moist open forest on trees and on rocks. Absent from dry areas.	**Habitat** — On rocks in low rainfall areas. Never grows on trees (to the best of the author's knowledge).

Fig. 1 *D. speciosum v. grandiflorum* from Gladstone. (approx. natural size.)

Photo: S.C. Clemesha.

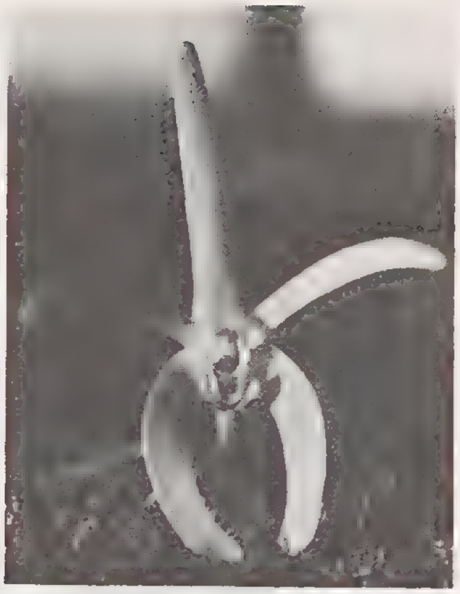
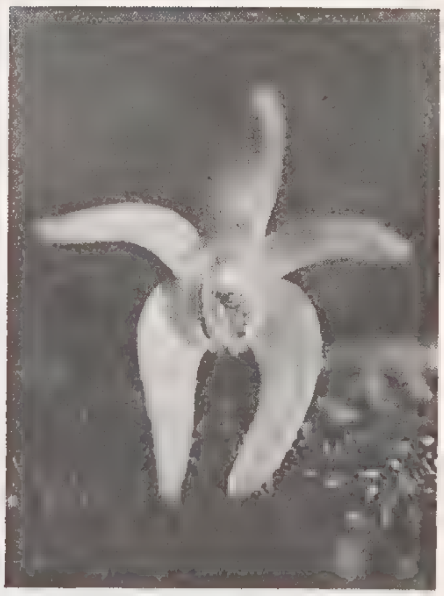


Fig. 2 *D. speciosum v. capricornicum* from Blackdown Tableland. (approx. natural size.).

Photo: S.C. Clemesha



The specimens of var. *carprcornicum* that I have seen from the inland (Carnarvon and Blackdown Tableland) part of its range differ from those from near Rockhampton in having darker coloured stems, shorter peduncles and cream to yellow flowers which are heavy in texture. These inland plants are much more like var. *capricornicum* than any other variety and I do not think these colour differences are important. They are mentioned in order to provide a more thorough understanding of this variety. The ranges and volcanic plugs on which var. *capricornicum* grows are isolated from each other by stretches of dry, flatter country and this probably accounts for the variation.

Comparison with var. *speciosum*

The inland race of var. *capricornicum* and the large-flowered var. *grandiflorum* resemble some examples of var. *speciosum* (Fig. 4 E.). This is because they are all rock-growing plants similar in habit. The var. *capricornicum* differs in having much smaller stems and leaves and curved lower sepals. The large-flowered race of var. *grandiflorum* is taller and shows some reduction in leaf size but its flowers are identical morphologically to var. *grandiflorum* except that they are larger and heavier in texture.

Comparison with var. *pedunculatum*

Var. *capricornicum* has much in common with var. *pedunculatum*. Both are dwarf-growing plants with comparatively small, very hard textured leaves. Both have habitats which are dry and adjacent to the habitat of a larger, related variety. The plants of var. *capricornicum* from near Rockhampton and Yeppoon have a long peduncle though less so than in var. *pedunculatum*. The plants of var. *capricornicum* from the inland part of its range are more pigmented than those of other varieties of *D. speciosum* but to a lesser degree than in var. *pedunculatum*.

The two varieties are separated from each other by about 600 kilometres and they differ as follows:—

Comparative Table 2

Var. *pedunculatum* (Fig. 5)	Var. *capricornicum* (Figs. 2 and 6)
Stems tapered, mostly 5-7 cm. tall; but rarely up to 15cm tall.	**Stems** only slightly if at all tapered and usually taller than in var. *pedunculatum.*
Peduncle dark, rigid, *at least* ½ the length of the raceme.	**Penducle** green, about 1/3 (in the inland form) up to ½ (in the typical form) the length of the total raceme.
Flowers crowded at the top of the raceme. Sepals *much* shorter and broader than in var. *capricornicum.*	**Flowers** not crowded.
Pseudobulbs, leaves, and peduncle all heavily pigmented with purple.	Purple pigment, when present, confined to the stems and leaves. Purple pigment often absent especially in the specimens from the coastal part of its range.

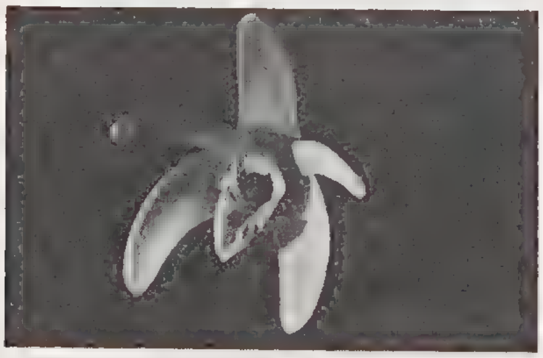


Fig. 5. *D. speciosum v. pedunculatum* from Herberton Range (natural size)

Photo: S.C. Clemesha

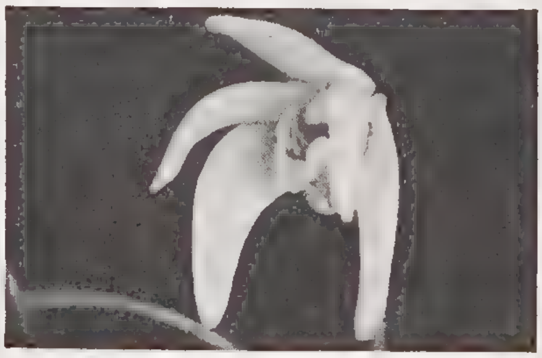


Fig. 6. *D. speciosum v. capricornicum* from Mt. Jim Crow (natural size)

Photo: S.C. Clemesha

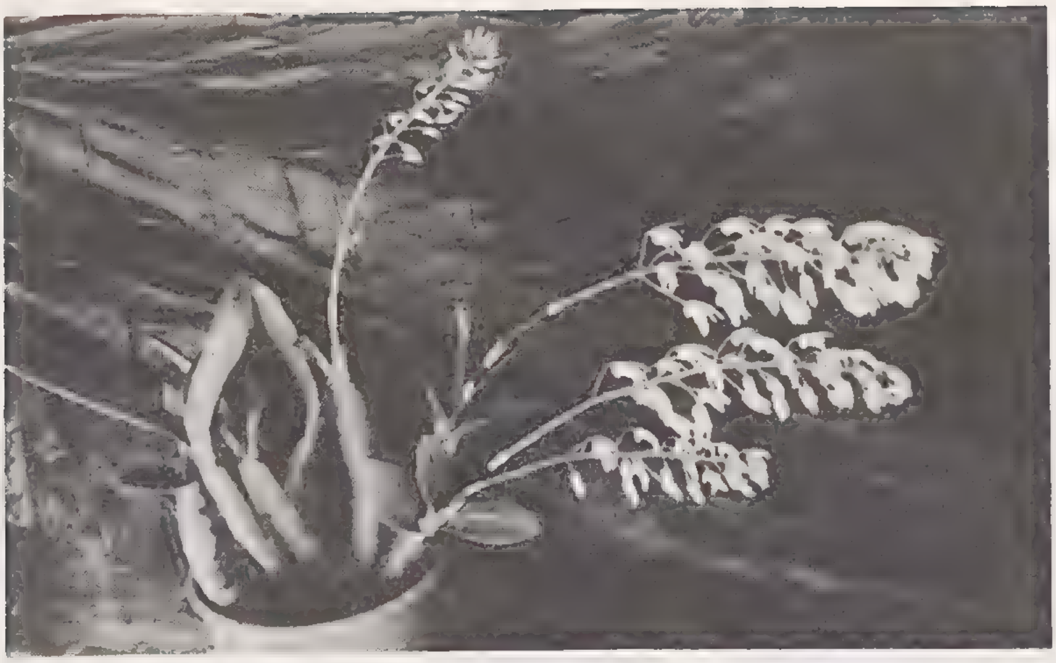


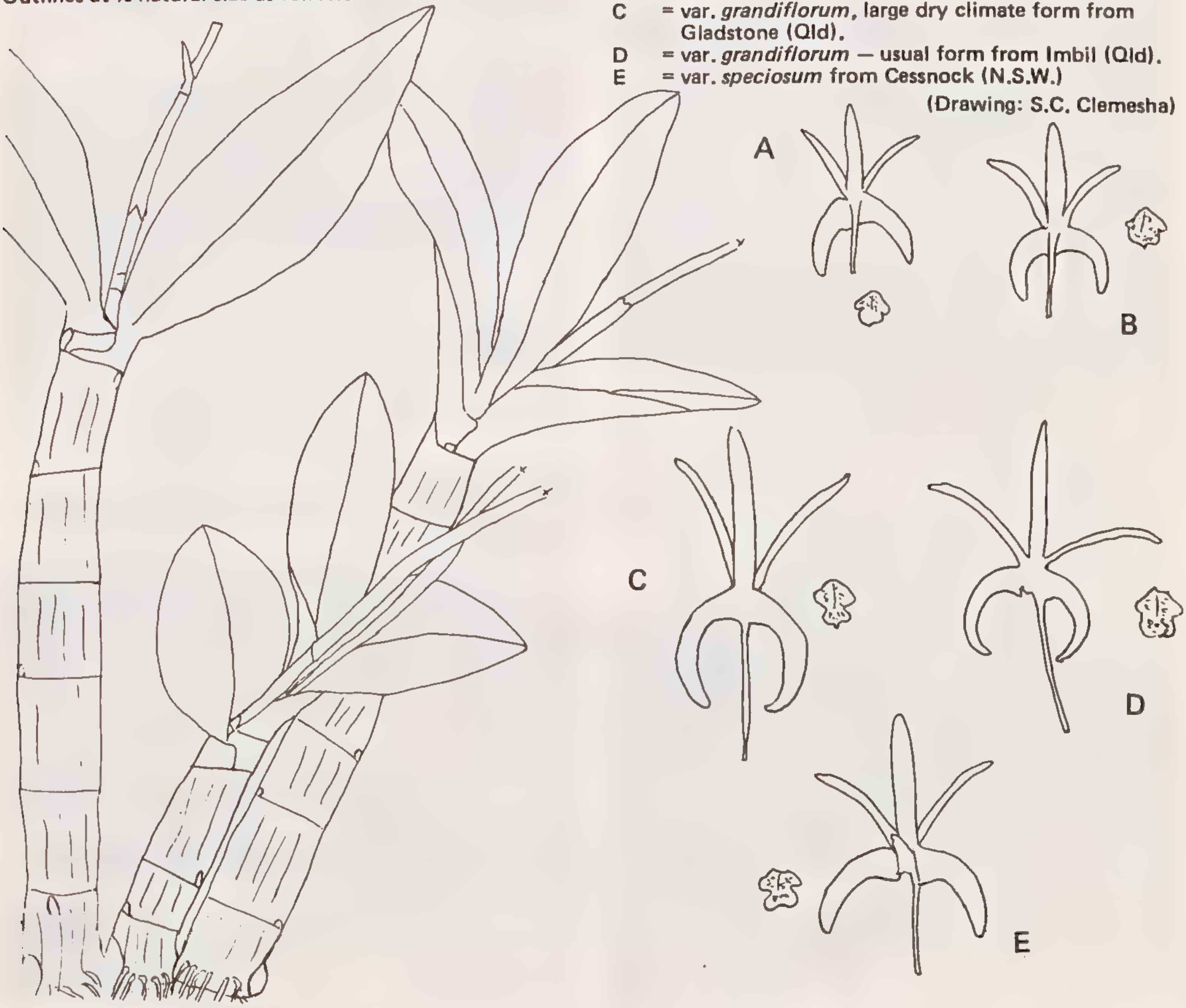
Fig. 3 *D. speciosum v. capricornicum* from Mt Jim Crow.

Photo: S.C. Clemesha.

Fig. 4. *D. speciosum v. capricornicum.*
Plant approx. ½ natural size.
Pressed flower specimens with separated labellums.
Outlines at ½ natural size as follows:

A = from Type plant var. *capricornicum* (ex Yeppoon, Qld.)
B = var. *capricornicum* from Blackdown Tableland (Qld.)
C = var. *grandiflorum*, large dry climate form from Gladstone (Qld).
D = var. *grandiflorum* — usual form from Imbil (Qld).
E = var. *speciosum* from Cessnock (N.S.W.)

(Drawing: S.C. Clemesha)



Var. *capricornicum* has been little known outside the general area of its natural habitat but at Rockhampton, orchid enthusiasts have recognised it as distinct from var. *grandiflorum*. Mr W. Houton of Rockhampton gave me a piece of var. *capricornicum* as "*D. speciosum* — the local form". He also mentioned the "big yellow ones" from about Monto (i.e. 180 km south of Rockhampton). I assume these to be var. *grandiflorum*. Mr J. Soley, also of Rockhampton, sent me a piece of var. *capricornicum* as "*D. speciosum var. compactum*" and in his letter told me that he used to have a plant of the large yellow variety (var. *grandiflorum*) from the ranges south of Rockhampton (i.e. the ranges near Monto and Miriam Vale — about 150 km south of Rockhampton).

In "The Australian Orchid Review" Vol. 35 No. 2 (June, 1970), p. 84, R.G. Cattanack of Rockhampton Botanic Gardens ("Native Orchids of the Rockhampton Area") stated: "On the Berserker Range and on the numerous volcanic plugs towards the coast are *Den. speciosum, D. mortii* and *Sarcochilus ceciliae* . . .". Later he stated: "To the south of Rockhampton in the ranges are the most magnificent plants of *Den. speciosum v. hillii* [i.e. var. *grandiflorum*] I've ever seen, some completely encircling their host trees and being about 8 feet in diameter . . .". Later still he mentions "*D. speciosum v. hillii* [i.e. var. *grandiflorum*] too big to fit in a utility."

Cultural Aspects.

D. speciosum var. *capricornicum* and the large-flowered race of var. *grandiflorum* are slow to mature from seed; as is var. *speciosum*. Like that variety also, but to a greater degree, they will not flower if grown in too much shade. The var. *capricornicum* under conditions of too much shade fails to produce flower "eyes". If moved into a stronger light it may continue to produce pseudobulbs with no flower "eyes" for at least two more years. A plant I was given two years ago had never flowered since collection in 1970. I have it in strong light and it has made two new pseudobulbs so far, both of which still have no flower "eyes". Shade-grown plants of this variety (like most plants grown in poor light) produce slender pseudobulbs that are slightly shorter than is normal and their leaves are larger and thinner in texture. However in var. *capricornicum* and var. *pedunculatum* this is more pronounced than in other varieties of *D. speciosum*.

I have found that plants of all varieties of *D. speciosum* will, in some years, make no new growth. This happens more commonly with the two dry country varieties. After a dormant year of no vegetative growth they often grow more vigorously than after a year of active growth.

All plants of var. *capricornicum* that I have studied have been sent to me from private collections except where otherwise stated. I have seen enough plants and contacted enough people to ensure the correctness of my records.

Conclusion

In my research on *D. speciosum* I found that all the varieties of it were being grown by orchid growers who recognised them as distinct even though in some cases knowledge of and interest in native orchids was limited. Different names have been applied to the different varieties in different areas as shown by the examples I have indicated under var. *capricornicum*. I hope my three articles have defined the six varieties which can be distinguished according to morphology and habitat.

Acknowledgements.

I would like to express my thanks to Mr J. Betts for preparing the Latin description of var. *capricornicum* and the following people for providing me with plants of it from their own collections: Mrs L. Cowan, Mr W. Houton, Mrs G. Parker, Mr W. Rundle and Mr J. Soley.

Footnote:

After the 1982 spring flowering season I intend preparing a summary including a table of distinguishing characteristics for all of the six varieties of *Dendrobium speciosum*. I consider this will be a useful ready reference for horticultural purposes. An extension of the range of distribution of var. *hillii* will be reported. To dispel some misconceptions that have come to my notice, the summary paper will also discuss the name of var. *curvicaule* and the persistent misuse of the term "var. *compactum*".

Lot 6 Skinner Close
Avocado Heights
Woolgoolga
N.S.W. 2456.

1 July 1982

LETTERS TO THE EDITOR

Dear Sir,

***Coelogyne* spp. of Papua New Guinea**

I found V.A. Chadim's two articles interesting (and photographs excellent). A. Millar's *Coelogyne "alata"* is almost certainly *C. carinata* Rolfe (probable synonym: *C. truncicola* Schltr). I would classify Chadim's No. 156 as being within *C. fragrans* Schltr. Only this species (in New Guinea) has a single leaf per pseudobulb. The others have two; though I have seen forms of *C. fragrans* (I think) with two leaves per pseudobulb. *Coelogyne fragrans* is very common in the Porgesa District of the Enga Province and is out in full flower at presnet (July). At Laiagam, in our collection, I have observed wasps pollinating this species.

Yours faithfully,
T.M. Reeve
Highland Orchid Collection,
Dept. of Primary Industry,
Laiagam, Enga Province, PNG.

23 July, 1982

Dear Sir,

***Dendrobium falcorostrum* and Logging**

Firstly I would like to express by appreciation of such a fine magazine. I believe "The Orchadian" is going from strength to strength and look forward to the possibility of colour plates.

However the main reason for writing is to correct a small error in part 3 of the interesting and informative series on The Basics of Native Orchid Growing by Don Barnham.

In the last paragraph he states that *Dendrobium falcorostrum* is fast becoming rare in its native habitat because of depredations by the timber industry of its host the Beech tree.

This is incorrect as the Niggerhead Beech on which it grows is not a species that is commercially logged in New South Wales.

Regards,
Lex Barton,
P.O. Box 106
Wauchope, 2446

5 July, 1982

Cultivation Based on Habitat Observation – IV *Dendrobium aemulum*

by Michael Harrison

In spite of its dependability as a horticultural specimen, or perhaps because of it, *Dendrobium aemulum* is one of our natives that we seem to take for granted. Every spring, seemingly without fail, it bursts into bloom and, for a week or ten days, we are treated to a prolific display of floral beauty, the extent of which most other orchids are incapable of matching. We have come to expect it and, like a good friend, *D. aemulum* seldom lets us down. We make excuses for other species when they fail to flower well (maybe I watered too much during the autumn, or perhaps I allowed the shade house to dry out excessively during winter), but if *D. aemulum* ever dares to flower poorly we feel positively insulted. It is generally an easy species to grow and is also quite common in the bush; as the old saying goes: familiarity breeds contempt.

Habitat.

Vegetatively, *D. aemulum* is variable, with four distinct growth forms recognised. Although these forms maintain their vegetative characteristics both in the bush and in cultivation, they cannot be separated varietally because on all forms the flowers are identical and indistinguishable. Probably the most distinctive and best known form is that which occurs on the Ironbark Gums and which is commonly known as the Ironbark Orchid. This is the form with relatively short, stout pseudobulbs, seldom growing taller than about 10 cm and thick, nearly succulent, light or mid-green leaves which may, at times, be almost circular in shape.

The major hosts of the Ironbark Orchid appear to be *Eucalyptus fibrosa* (Broadleaved Ironbark) and *E. paniculata* (Grey Ironbark) and usually only very mature trees are colonised. These trees, particularly *E. fibrosa*, in their fully grown forms, commonly develop tall, unbranched boles and untidy, spreading crowns. *D. aemulum* generally favours the main lateral limbs, high up in the heart of the crown and, under favourable conditions, it may completely cover the upper surfaces and sides of these limbs. At times, it also grows on the main trunk and isolated plants are occasionally seen quite low down, only a few metres above ground level. It usually situates itself in positions where it receives plenty of light and the pseudobulbs often develop a rusty red coloration and the under-surfaces of the leaves may also display an attractive shade of purple. This form is distributed along the ranges of the east coast of New South Wales and into southern Queensland, usually in open but somewhat sheltered positions on ridges and hillsides, obviously in areas where conditions suit the host tree. Where it does occur, it frequently colonises every suitable mature tree in the area and fallen limbs often carry dead or dying plants.

As the name implies, the Ironbarks are very rough-barked trees and the roots of the orchid find their way deep into the folds and contours in their search for water and nutrients, for even during dry weather the bark of these trees is able to trap and retain moisture in its deepest crevices. In many areas of its range, this form of *D. aemulum* is exposed to extreme conditions, ranging from summertime maximums in excess of 40°C right down to -4°C or -5°C in winter. The fact that it usually situates itself well above ground level (often 30 metres or more) tends to moderate these extremes; but even so it still has to cope with conditions that would be unacceptable to most other epiphytic orchids.

The second vegetative form of *D. aemulum* is the so-called "rainforest form", which has a wide distribution right along the east coast from about the Clyde River in southern New South Wales, northwards to the Atherton area of northern Queensland. This form is considerably more variable than the Ironbark form and the pseudobulbs range in size from only about 6-7 cm long up to 30 cm or more. The leaves, too, vary in both size and colour from long, thin, dark green and shiny, through to dull green and almost round. In my estimation, the rainforest form includes that which grows on the giant Brush Box trees (*Tristania conferta*) and which is often described as a separate form, namely, the "Brush Box Orchid". Where it grows on Brush Box it does tend to form neat, flat, circular or semi-circular clumps in which the lower canes are often curved upwards, and the leaves are not as long or distinctly shiny as when it grows in rainforest. But apart from these characteristics (which I feel can be explained by the higher light intensity encountered by plants growing on this host than on most of its other hosts, as well as the inherent flat and regular nature of the trunks of Brush Boxes) there are no other consistent differences. Add to this the fact that when grown in cultivation, the "Brush Box Form" and the "Rainforest Form" become indistinguishable, then it becomes obvious that any vegetative differences are purely environmental in origin. As well as occurring on Brush Box, sometimes prolifically, from the base of the tree right up the trunk to a height of ten or twelve metres, this form also occurs on other marginal rainforest trees such as Scrub Myrtle (*Backhousia myrtifolia*), Water Gum (*Tristania laurina*), *Trochocarpa laurina*, and also sometimes on Forest Oak (*Casuarina torulosa*) and Coachwood (*Ceratopetalum apetalum*). It often favours areas where these trees grow along watercourses in otherwise more open country but in some places it can be seen well away from water. I remember seeing a whole colony of *D. aemulum*, some with canes exceeding 30 cm in length, growing on a stand of Forest Oaks near Bellingen a few years ago. It was on a very dry and rocky hillside more than a kilometre from the nearest creek More than anything else, I was surprised at the vitality and strength of this colony in what appeared to be a relatively harsh environment. In many localities, certainly around the Sydney region, this form and the ironbark form occur quite close together in areas where open eucalyptus forest covers the hillsides while rainforest species grow along the creeks and in deeper gullies and ravines. Where it grows in these often poorly lighted situations, it tends to form spindly and untidy clumps. with the stems pointing haphazardly in different directions. The leaves develop a very dark green and shiny appearance and flowering appears to be somewhat retarded.

One thing I have noticed about the two forms of *D. aemulum* just described is that in certain cases it can be difficult to distinguish them. In my bush house I have several plants which originally came from the trunks of Brush Boxes; I know because I collected them myself (with proper permission of course) from logged areas near Dorrigo and Kyogle. Some of them have stems which never grow taller than about 10 cm and which are quite thick for almost their entire length. One in particular could pass for the ironbark form under the closest expert scrutiny and the others would also be very difficult to define. Likewise, I have a plant I collected from an Ironbark near Bulladelah which looks very much like the rainforest form, although the pseudobulbs are only about 10 cm long. The point to be made here is that there does appear to be an area of overlap between these two forms. Apart from a knowledge of the host tree, I find that the best guide to identification is generally the length of the pseudobulbs, the rule being that if they are longer than about 10 cm, then the plant is the rainforest form, and if they are less than 10 cm, then the plant is probably the ironbark form. Other factors, especially shape and colour of leaves, can also be used in identification, but again there are considerable variations. I have often speculated about the outcome if seed from, say, the ironbark form came to rest and germinated and grew on a Scrub Myrtle. This must, I suppose, happen from time to time and I wonder if the vegetative characteristics of the parent plant would be maintained. The question, in its basic form, is thus: are the vegetative characteristics of the different forms of *D. aemulum* genuine morphological features or are they due entirely, or in part, to environmental conditions? I have already stated that I believe the Brush Box Form and the rainforest form are one and the same. Perhaps this is also true of the other forms. Some keen grower will just have to get hold of seed from each of the different forms and grow all the resulting seedlings under identical conditions. Who knows what the outcome will be?

The final form to be mentioned is that which occurs on the Atherton Tableland in northern Queensland. This form reportedly grows on *Callitris* trees but I am unfamiliar with it in its native habitat. I have a plant in my bush house which I believe is an example of this form; and it does appear to be quite distinct from the other two. The stems are very thin (only about 3-4 mm), and are up to 15 cm long. When it flowers it produces only three or four flowers on each inforescence, compared with eight to fifteen on the ironbark and rainforest forms but, in keeping with *D. aemulum* as a species, they are identical to the flowers of the other forms. In short, *D. aemulum* can be summed up as vegetatively quite variable, but florally there is very little variation.

Cultivation

Regardless of their origin, I tend to grow all my plants of *D. aemulum* under the same conditions. A shade factor of 70% seems to suit them well, although a little more or less would not make any appreciable difference. Good ventilation is important to ensure that fresh air is always flowing through the bush house, creating an open, airy atmosphere which approximates natural conditions. A close stale atmosphere will quickly lead to fungal problems which, having taken hold, may be difficult to eradicate.

D. aemulum lends itself well to both pot and slab cultures. A solid piece of tree-fern fibre probably suits it as well as anything. Once a plant has become established on such a host it will grow and prosper for years. I still have plants on original pieces of tree-fern from ny earliest days of orchid growing, fifteen years ago, and these are as good as ever. For this species I still prefer tree-fern fibre to cork because the roots tend to run off cork into mid-air, whereas with tree-fern they seem to stay fairly well within the fibrous mass. I have noticed that *D. aemulum* prefers a host that it can get its roots into rather than just on the surface. This is not to say that cork is unsuccessful as a host; for I have several plants growing well on pressed cork. One other problem with cork, generally, is that plants established on it require more frequent watering than those on tree-fern fibre. Of course this may suit the cultural techniques of many growers; particularly those who like to grow their plants "wet". Lengths of "paper-bark" log also suit *D. aemulum* quite well, as do ironbark and casuarina logs of 5-10 cm diameter.

Although not commonly seen in pots, *D. aemulum* will do well in any of the commonly used potting media such as pine bark, charcoal and crushed gravel in equal proportions, or a similar mix, as long as drainage is perfect. Some growers are now using casuarina bark in place of pine bark and are achieving excellent results. American fir bark is a good medium but is, unfortunately, expensive. Charcoal appears to have waned in popularity over the last few years, mainly due to the fact that it absorbs mineral salts which gradually make it toxic over a period of time, depending on the frequency and strength of the grower's feeding programme. This toxicity will certainly affect the roots, causing burning of the root tips and a subsequent reduction in root activity and efficiency. Leaching of the medium by heavy watering the day following feeding is the most effective way of reducing this build-up of salts in potting mixes generally. Leaching will not prevent charcoal from becoming toxic but it will slow the process considerably, giving any composite medium containing this ingredient a longer pot life. Many growers still use charcoal and, if it is handled properly, it can be a valuable component in a medium, especially for lithophytic species such a *D. speciosum, D. kingianum,* etc. Terracotta pots also tend to absorb mineral salts; so beware of these and treat them accordingly as regards feeding and leaching.

Care for the Root-system

As with all species, *D. aemulum* needs special care in the early stages of establishment in cultivation to avoid excessive shrivelling of the pseudobulbs and leaves, a condition that often occurs due to the inability of a recently collected plant to absorb water because of a damaged or amputated root-system. Bear in mind that when a plant is cut off the trunk of a tree, or removed from a rock face, the roots are invariably damaged, sometimes severely.

The root system of a plant is directly proportional in size and extent to the bulk of that plant, and has grown in response to the requirements of the plant within its environment. Plants are economic organisms and they are not in the business of producing roots or, for that matter, any vegetative parts that are not essential to the well-being of the plant as a whole. (Flowers, on the other hand, are produced for the well-being of the species as a whole). Therefore, a plant with a damaged root-system is at a distinct disadvantage and requires careful treatment until it can again support itself normally. If it is not given this special care then it may be severely set back and may take several years to recover. It may also die. The first stage of this treatment is to position the plant firmly in the potting medium, using stakes and ties where necessary, to ensure that it will not move or wobble when the pot is picked up or knocked. This is essential to prevent friction damage of the new roots when they appear. This, of course, also applied to plants which are tied on to slabs of tree-fern, cork, etc. Plants to be established on these hosts should be tied firmly in position with fishing line, wire or pieces of nylon stocking, again so that they cannot move when the slab is picked up or buffeted by the breeze. Next, the plant should be put in a cool, shady, protected position where it will spend the next few months becoming acclimatised to its new home and, hopefully, starting new roots. It should be kept a little on the dry side for the first couple of weeks to encourage new root production, the most important environmental factor at this stage being a fairly high level of humidity to reduce dehydration. Misting of the plant should be carried out on a regular basis, probably every day or even twice a day depending on the weather. The addition of Hormone 20^{R} to the misting water every second week will encourage the plant to initiate new roots. As the new roots begin to emerge, light watering can be commenced but it is better to keep this to a minimum until the roots are at least 2 cm long. Once they have reached this stage normal watering and feeding can commence. From this point until the plant has established a normal root system, watering should be increased to a little above normal levels to ensure that the plant never dries out too much. Once you are satisfied that the plant has established itself successfully (and this may take up to twelve months) it can be moved into a position where it will receive normal light levels for that species and watering can also be eased back to normal. The plant can then be treated like any other in your collection.

One final point regarding the establishment of recently collected plants concerns the practice of many growers of cutting off the roots of such plants prior to potting or tying to a slab, in the mistaken belief that by doing this they will stimulate the plant into producing new roots more quickly. This is not a sound cultural technique; for such plnats will produce new roots as soon as they are able, and to remove what roots they may still have, will only intensify the shock and stress they are suffering. Certainly, in many cases, some trimming of damaged or excessively long roots may be necessary but try to keep this to a minimum. Even those which have been bent or kinked are still able to absorb and transport water and nutrients. Remember also that roots which have had their growing tips damaged or knocked off are still quite capable of initiating lateral root growth near to the point of injury. Roots which have been completely "mangled" should be carefully removed with a pair of sharp scissors as close to the rhizome as possible and the stumps dusted with fungicidal powder. Incidentally, fungicide powder should be applied to any cut on a plant, particularly the rhizome when it is severed during repotting or back-cutting.

D. aemulum seems to be fairly free of insect and fungus problems. It may, of course, be attacked like any other orchid but I can think of no specific pest to which it is especially prone. I suspect that it may be adversely affected by air pollution. The behaviour of my plants during the time I lvied at Annandale, an inner city suburb of Sydney seemed to indicate this. The city of Sydney is notorious for high levels of air pollution and, during the six years my orchids spent there, most of the plants of *D. aemulum* developed a pinkish mottle on their leaves which, regardless of treatment, persisted until I moved to the outer suburb of Epping in 1978. The affected leaves never lost this discolouration but leaves produced since then are virtually free of it. It does occasionally appear, but only slightly. Perhaps the cause was really some kind of mineral deficiency but I think air pollution is the more likely factor.

Prospective growers should have no trouble in obtaining plants of *D. aemulum* for many nurseries stock it and most mail order suppliers also list it. It is generally an easy orchid to grow, even for the beginner, for it will tolerate inexperience and a certain amount of neglect. It is one of the earliest of our spring flowering orchids, usually opening in August, depending on the weather. Its regular appearance each year heralds the coming of spring. One of its most pleasing characteristics is its ability to flower repeatedly, year after year, from the old canes and it is this habit which allows *D. aemulum* to flower so prolifically. A well grown specimen is quite capable of flowering extensively enough to completely obstruct from view the underlying plant (witness the photograph at p. 89 of the June issue of *The Orchadian*). Such a sight is likely to remain in the memory for years.

Lot 2, Howes Road,
via Wilberforce
N.S.W. 2756

August, 1982

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New Registrations by the R.H.S. January—March 1982
— from lists in the Orchid Review *May—August 1982)*

NAME	PARENTAGE	REGISTERED BY (originator in brackets)
DENDROBIUM		
Blushing Rose	Bardo Rose x *suffusum*	D.M. Cannon (W. & J. Cannons)
Gracious Falcon	*x gracillimum x falcorostrum*	D.M. Cannon
Andrew Upton	Judy Leroy x Star of Gold	W.T. Upton
Yondi	*kingianum* x Eureka	S. A. Batchelor
Aussie Ira	Ellen x *tetragonum*	P. Spence
Julie Skillicorn	*tenuissimum† x striolatum†*	W. Skillicorn
Kungara	*tetragonum x ruppianum*	W.T. Upton
Phil Deane	Ella Victoria Leaney x *tetragonum*	S. Batchelor (Robert Deane)
PARACHILUS		
Nicky	*Sarco. fitzgeraldii x Psarco.hirticalcar*	D.M. Cannon
PTEROSTYLIS		
Cutie	*baptistii† x cucullata†*	L.T. & M.K. Nesbitt (H. Goldsack)

† This symbol marks the first occurrence of this species as a parent in hybrid registration.

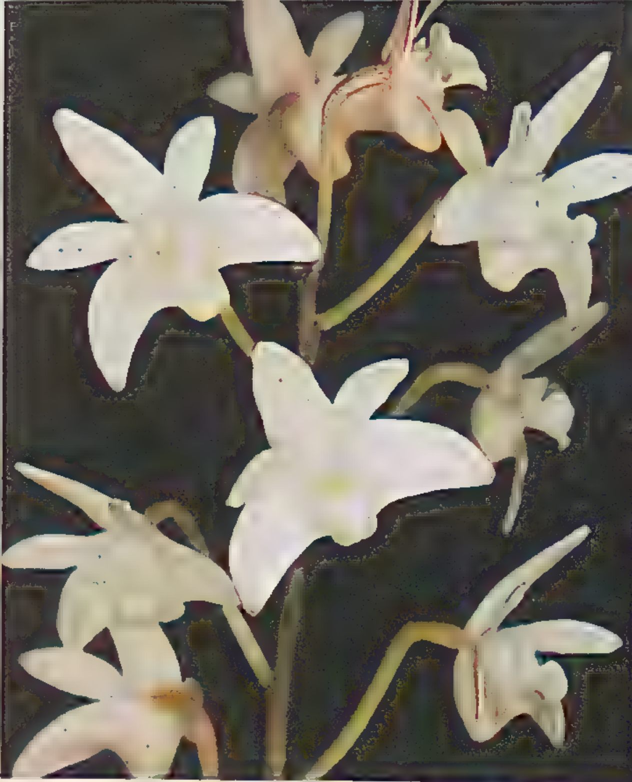
New Hybrids — Advance Notices from Registrants.

The following information was received from David Cannon on 16th August, 1982 of new registrations approved but not yet published by the R.H.S. Details of some of the new crosses appear at p.112.

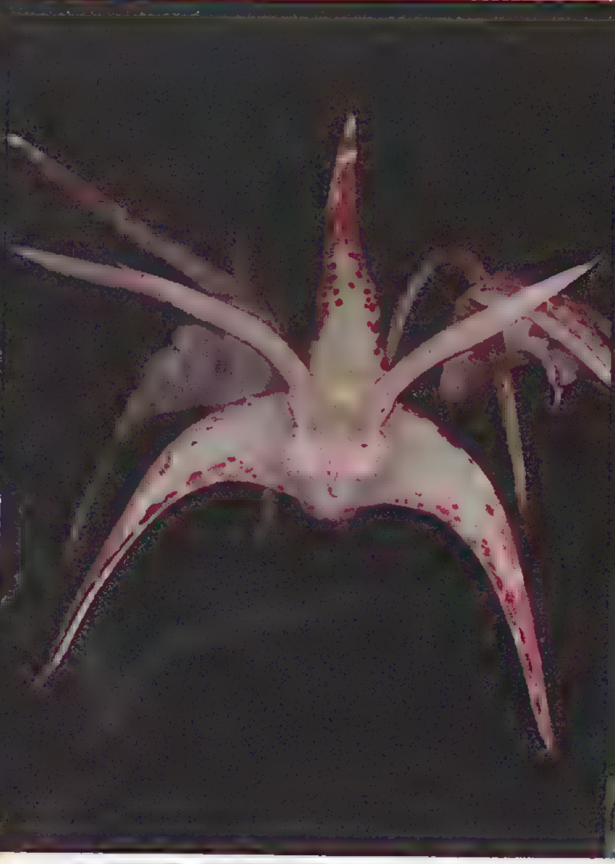
NAME	PARENTAGE	REGISTRANT
DENDROBIUM		
Peach Star	*tetragonum x* Hastings	D.M. Cannon
Gracious Cascades	*speciosum x x gracillimum*	D.M. Cannon
Kim Heinze	Blushing Star x Hilda Poxon	D.M. Cannon

Spring is Bloo

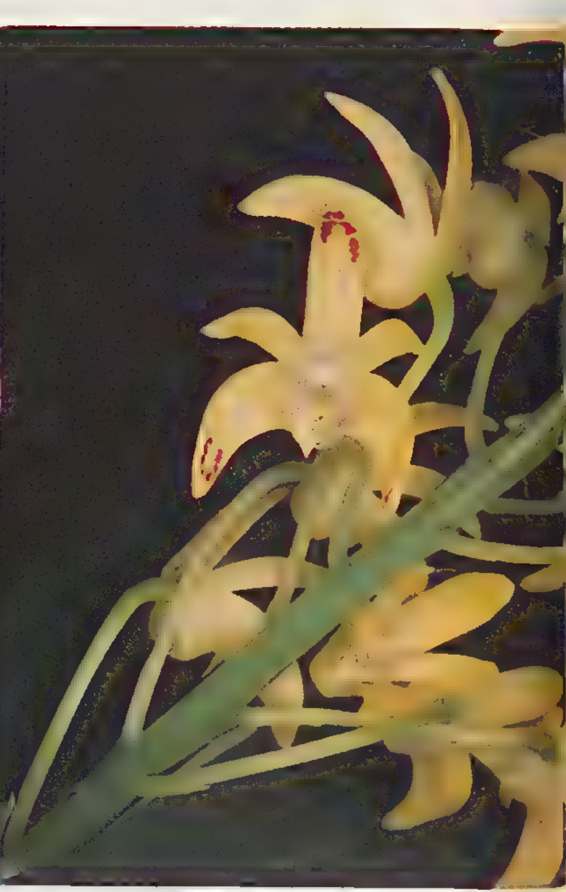
AUSTRALIAN NATIVE



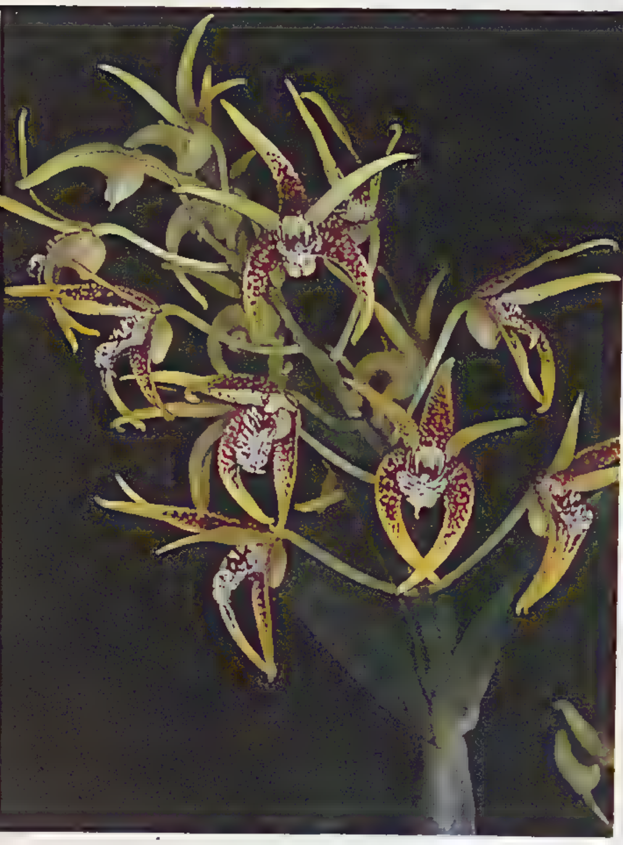
Den. x delicatum 'Apple Blossom'



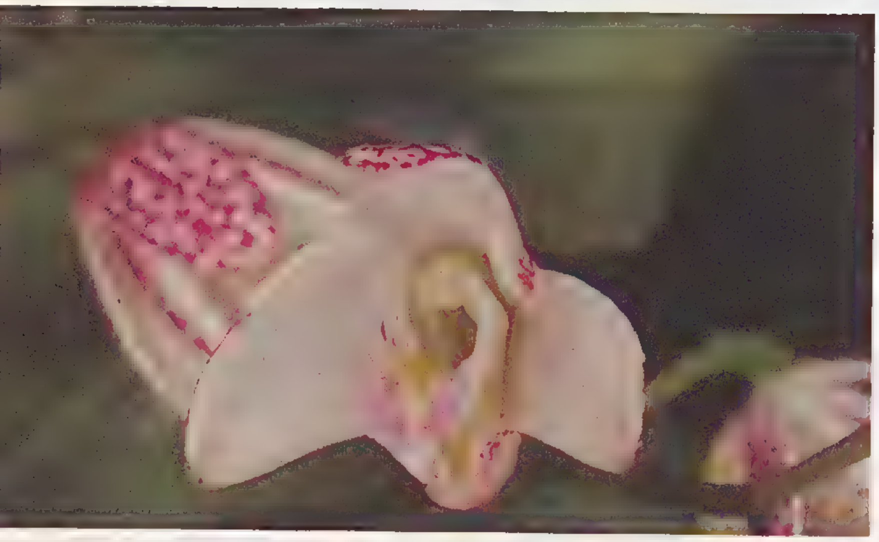
Den. Blushing Star



Den. x gracillimum



Den. Allyn Star



Den. x suffusum

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Den. Gillian Leaney (delicatum 'Apple Blosso
Den. Suffusum — spot
Den. Eureka x gracillimur
Den. Allyn Star x falcorostrum — pe
Den. x suffusum x falcorostrum
Den. Blushing Star — star
Den. Ellen 'Snow White' x falcorostrum —
Den. Delicate Falcon — pe
Den. King Rose — pin
Den. Gillian Leaney 'Alba' (delicatum 'Appl
— white to cream, pe

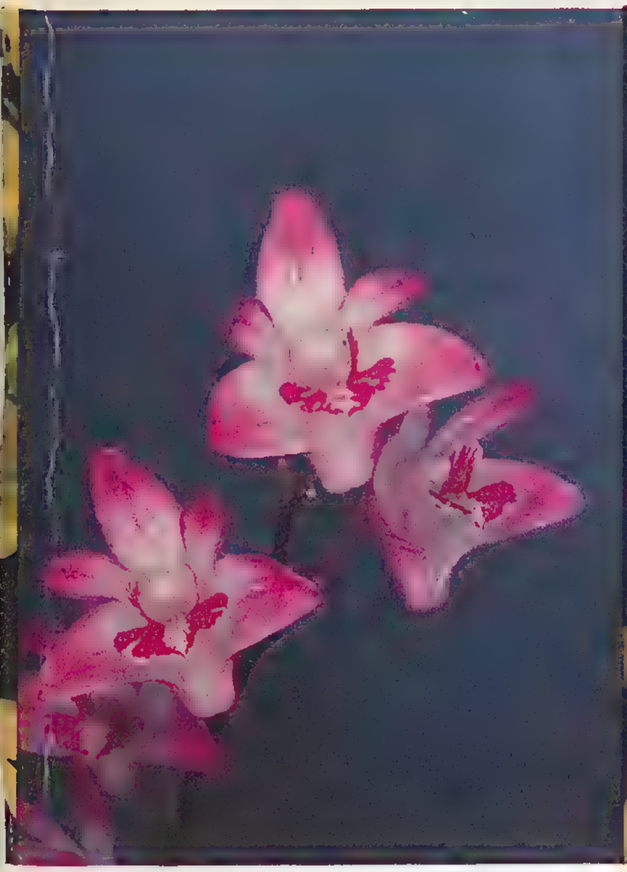
'AUSSIE CONFERENCE

(ONE OF EACH HYBRID

10 PLANTS

ning Out all Over

DENDROBIUM HYBRIDS



Den. kingianum 'Betty'

Den. Eureka

Den. King Rose

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t parents to give prolific growing hardy plants.

Den. Ellen 'Snow White'

COLLECTION'

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ed pinks.
— yellows.
umed cream to yellow.
- perfumed pinks.
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umed whites.
to reds.
Blossom' x kingianum 'Alba')
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NOTES FROM THE HYBRIDISTS

From Sid Batchelor (5/7/82)

Dendrobium Yondi = *kingianum* 'Betty' x Eureka 'Woodlands'.

Date of pollination: 21-9-77. Date of first flowering: 8-9-81. Description of flower: 44 mm across sepals; width of sepals at base 10 mm; dorsal at base 8mm; height of flower overall 40 mm; colour bright cyclamen pink; lip well displayed 10 mm wide and does not turn under, lip colour white with all-over fine cyclamen pink flecks; flowered on a very small plant and others of the cross which have flowered since indicate a great improvement on either of the parents.

Dendrobium Phil Deane = Ella Victoria Leaney x *tetragonum var. giganteum.*

Date of pollination: 1978. Date of first flowering: 1-9-81. Description of flower: shaped like a good robust Ellen; 55 mm overall height; 23 mm across sepals; lip 15 mm long and 8 mm wide at base; sepals and petals deep mahogany red; lip pure white with brighter red very conspicuous blotches. The cross is named for Phil Deane a gentleman who is now over 80 years of age, and who has devoted the greater part of his life to a very active and productive interest in orchids. I obtained the permission of Mr Deane and his family to use his name as accepted for registration.

From David Cannon

How often do we see the names of our earlier native hybrids and wonder what they looked like?

Hybridising is using something old to produce something new. A simple statement but one that covers a vast time zone. Our forefathers must have had some aims and objectives when they produced our older hybrids. When you look at the early registrations and try to find a flowering plant, how easy is it? Because they are so scarce I think it is important to remake some of our older hybrids as well as producing new ones.

Over the last decade our native orchids have come into their own and we now have available some very choice clones to use as stud parents. In line with the Albino breeding (ref. *Orchadian* V. 6 No. 10 p. 241) that I am doing, "remakes" of Dendrobium Gillian Leaney have been made by using *D. x delicatum* 'Apple Blossom', a natural clone, with *D. kingianum* 'Alba'. Also a deep red *D. kingianum* has been used so that in time we will be able to see what difference the two colour forms of *D. kingianum* have in these hybrids.

Dendrobium Jane Leaney has been remade, again using *D. x delicatum* 'Apple Blossom', with a deep yellow *D. speciosum* as the other parent. Remakes of other earlier hybrids, D. Andrew Perrson, D. Allan Printer and D. Peach Glow have also been made and time will give us flowering of these.

When one looks at the new hybrids that are now being made we see that we are advancing with great strides. We now have hybrids that can flower any month of the year and, in many instances, twice a year. Certainly *D. tetragonum* is the star parent of these hybrids. The first of D. x Hilda Poxon hybrids have now flowered. D. Kim Heinze (Blushing Star x Hilda Poxon) is a true *tetragonum* style hybrid (star shaped flowers and beautifully coloured). Plants are flowering with up to 8 flowers on the first flowering. As the plants mature we will see some lovely flower displays. The colour is hard to describe being mainly a yellow-green background, with heavy dark pink to maroon margins on the petals and sepals with some spotting of the same colour. The labellum is not only quite large but is also flat and carries good colour as well. The plant is compact in its growth at this stage.

D. Peach Star (*tetragonum* x Hastings) flowered for the first time last spring. As the name implies it was a lovely peach colour, yellow flushed with red and having deep red markings on the labellum. A hybrid that I believe holds great promise is D. Allyn Star x *D. falcorostrum.* Both parents are outstanding clones. Both flower freely and the D. Allyn Star is very heavily marked. Yellow flowers with dark maroon overcolour. This and the perfume of *D. falcorostrum* should give us cream to yellow, star shaped flowers and maybe some spotting. An added benefit will be the perfume from the *D. falcorostrum.*

Other hybridists are also producing many beautiful orchids with *D. tetragomum* blood lines.

As well as the above two areas of breeding I am also working with *D. fleckeri.* D. Eureka and D. Sunglow have been good stud parents and should produce deep yellow to apricot flowers. This breeding line is also being used with *D. tetragonum* hybrids and from these a wide range of flowering times will appear. An additional benefit will be multiple flowering and in some instances multi-coloured flowers.

D. Blushing Rose and D. Gracious Cascades are two plants that were obtained form Wayside Nurseries many years ago. D. Blushing Rose has soft blush pink flowers with some red speckling and a delightful perfume. D. Gracious Cascades is the most floriferous Dendrobium hybrid I have seen. On first flowering one raceme carried over 35 cream flowers on an arching, pendulous raceme. Truly a magnificent hybrid. Both these hybrids are now being used as stud parents. D. Gracious Falcon resulted from my hybridising in the early 1970's. Cream to yellow perfumed flowers on a tall raceme and vigorous growing are characteristics of this hybrid.

I am also working with the *Sarcochilus* species. Parachilus Nicky has been the first to flower. Very few plants came from the pod but first flowering last year was well worth the effort. Small, compact growing plants requiring a minimum temperature of 5°C are giving cream to white flowers heavily spotted with red. The labellum is almost identical to that of *Pteroceras hirticalcar.*

This spring I look forward to seeing something new in flower as well as remakes of something old.

PRELIMINARY CHECKLIST OF AUSTRALIAN *ORCHIDACEAE*

The National Botanic Gardens, Canberra, has published the first comprehensive list of all native orchid species presently recognised as Australian. Compiled and edited by Mark Clements this 216-page publication will be invaluable to botanists, students and growers. The Australian Orchid Foundation has sent a number of copies to all ANOS Groups for appropriate distribution to interested members.

The purpose is to satisfy a long-felt need for a single authoritative checklist giving the currently accepted names (and synonyms) of every orchid native to mainland Australia and Tasmania as well as the immediate coastal islands, Macquarie Island and Lord Howe Island. It does not, however, include Norfolk Island, Christmas Island, the Cocos Keeling Group or Heard and McDonald Islands.

By the very nature of taxonomy there can be no doubt that this work will "stimulate taxonomic and other investigations in the family Orchidaceae", as Dr R.W. Boden suggests in his foreword.

From Mr Clements we understand that a second edition is planned for publication in 1983. In the meantime he will prepare an article for *The Orchadian* explaining the reasons for name changes included in the Checklists.

Three Confused Species of *Dendrobium* section *Pedilonum* from New Guinea and the Moluccas

by *T.M. Reeve & **J.J. Wood

Summary. ***Dendrobium pseudoglomeratum*** **Reeve and J.J. Wood, a new species in section *Pedilonum* from New Guinea is described here and its affinities with *D. concavissimum* J.J. Sm. and *D. glomeratum* Rolfe are discussed.**

Introduction.

The orchids of New Guinea have been poorly studied in recent years and most of the relevant early literature written in German or Dutch is often unavailable or difficult to obtain. The lack of up-to-date accounts has resulted in the misidentification of many desirable orchids from New Guinea and the Malay Islands. *D. pseudoglomeratum* newly described here is one of New Guinea's most colourful species and has remained in nomenclatural confusion for many years. It appears twice on page 40 of Andreé Millar's recent introduction to New Guinea orchids (1978) as *D. chrysoglossum* Schltr and *D. glomeratum* Rolfe respectively. A careful examination of the original descriptions and Type specimens has shown that both names are incorrectly applied. All three species have purple to purple-pink flowers with an orange to orange-red lip and this is probably the main cause of the confusion.

Key

Stems branched, cylindrical; flowers 1-2 cm long; inflorescences many-flowered, dense . . . . .1. *D. concavissimum* (New Guinea)

Stems unbranched, cylindrical or fusiform; flowers 2-5 cm long; inflorescences few to many flowered, lax or dense:

Stems cylindrical; inflorescences borne on both leafy and leafless stems, few-flowered, lax; mentum acute; lip apex distinctly cucullate; rostellum rectangular . . . . .2. *D. glomeratum* (Moluccas)

Stems fusiform; inflorescences borne on leafless stems only, many-flowered, subdense to dense; mentum obtuse; lip apex inflexed; rostellum triangular . . .3. *D. pseudoglomeratum* (New Guinea)

Figure 1.
Dendrobium concavissimum J.J. Sm. Illustration of Type (*de Kock* 203) in *Nova Guinea* 12: Tab. XVI, Fig. 45 (1913).

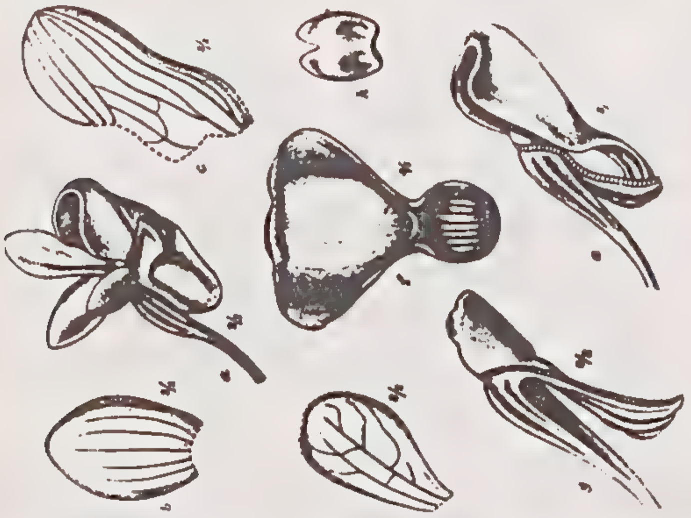
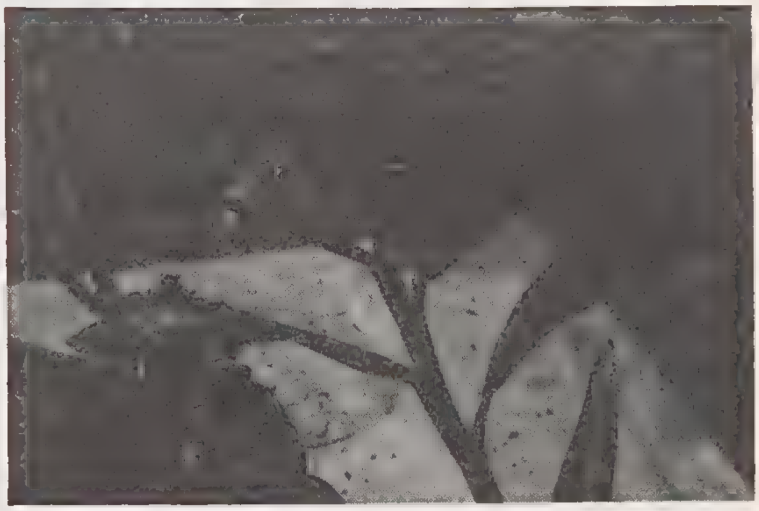


Figure 2.
Dendrobium concavissimum J.J. Sm. *Reeve* 228 collected at Paiela, Enga Province in February 1977 (print from colour negative).



1. Dendrobium concavissimum J.J. Sm. in Bull. Jard. Bot. Buitenz., Ser. 2, 2:11 (1911); in Nova Guinea 12:57, t.XVI, fig. 45 (1913). Type: Irian Jaya (formerly Netherlands New Guinea), 'auf dem Goliath in 1600m ü. d. M., A.C. *de Kock* 203 (BO, holo., L iso.!).
D. obtusum Schltr in K. Schum. & Lauterb., Fl. Deutsch. Schutzgeb. Südsee Nachtr., 177 (1905), non *D. obtusa* Rchb.f., in Walp. Ann., 6:1150 (1861), indolapsu, vide *Dendrocolla obtusa*. Type: Papua New Guinea, 'auf Bäumen in den Wäldern des Torricelli-Gebirges, alt. ca. 1100 m, 'R. *Schlechter* 14451 (B, holo., destroyed), **syn. nov.**
D. fornicatum Schltr in Fedde Rep. Beih., 1:509 (1912), Fedde Rep. Beih., 21, t. CLXXIII, fig. 644 (1928). Type: Papua New Guinea, 'auf Bäumen in den Wäldern des Maborogebirges, c. 1300 m ü.d. M.' *R. Schlechter* 19539 (B, holo., destroyed, K. iso.!), **syn. nov.** *D. chrysoglossum* Schltr *loc. cit.*, 509 (1912); *loc. cit.*, t. CLXXIII, fig. 645 (1928). Type: Papua New Guinea, 'auf Bäumen in den Wäldern des Finisterregebirges, c. 1300 m ü. d.M.' *R. Schlechter* 19172 (B. holo., destroyed), **syn. nov.**
D. rhodobotrys Ridl. in Trans. Linn. Soc. Bot., Ser, 2, 9:170 (1916). Type: Irian Jaya, 'Camps VIb and VIc, 3900 and 5500 ft., and VII to VIII, up to 4900 ft., 1913, *C. Boden Kloss s.n.* (BM, holo.!, K, iso.!), **syn. nov.**
D. lauterbachianum A.D. Hawkes in Orquidea, 28:202 (1966), **syn. nov.**

An epiphytic or terrestrial *herb* up to 1.5 m high. *Stems:* terete, branching, resembling some section *Calyptrochilus* species, 10-150 x 0.25-1.1 cm, nodes 1-4.5 cm apart. *Leaves* lanceolate to linear-lanceolate, subacute or obtuse, minutely apiculate, 2-11 x 0.6-2.5 cm. *Inflorescences* densely 5-20-flowered, arising from both leafy and leafless stems, peduncle and rhachis short. *Bracts* ovate to suborbicular, apiculate, concave, 0.3-1 cm long. *Flowers* medium-sized, varying in the extent to which they open, 1-2.1 x 0.5-1.5 cm. *Pedicellate ovary* 6-grooved, c. 11 mm long. *Dorsal sepal* ovate, obtuse, convex, c. 8 x 5.5 mm. *Lateral sepals* obtuse, c. 15 x 8.8 mm. *Petals* obovate, c. 9 x 4.8 mm. *Labellum* broadly spathulate, with distinct transverse ridge, 14 x 6 mm, 12 mm wide when expanded. *Column* 3 mm long, foot c. 7 mm long.

Distribution: *D. concavissimum* is widely distributed throughout New Guinea east as far as Bougainville, occurring in the montane regions between 700 and 2000m.

List of Collections:

Irian Jaya: Mt Goliath, 1600 m, epiphyte, May 1911, *de Kock* 203 (BO, L); 1250-1650 m, Feb. 1913, *Boden Kloss s.n.* (BM, K); Wissel Lakes, Jan. 1939, *Eyma* 4352 (K); Enarotali, Lake Paniae, Wissel Lakes, 1900m, epiphyte, March 1955, *Versteegh* BW 3005 (L); Star Mountains, Sibil valley, 1200-1300 m, terrestrial, May 1959, *Kalkman* 4009 & 4186 (L, LAE); Watjetoni Mtn, Kebar valley, 1200 m, epiphyte, Nov. 1960, *Versteegh* BW 10324 (LAE); Baliem valley above Wellesley, 2000 m, terrestrial, Aug. 1966, *Kostermans & Soengang* 603 (K, L); Singtara, via Wamena, Baliem valley, 1620 m, terrestrial, May 1973, *Raynal* 17005 (K, LAE, P).

Papua New Guinea mainland: West Sepik Province: Torricelli Mountains 1100 m, epiphyte, April 1902, *Schlechter* 14451 (B, destroyed); Lumi District, Torricelli Mountains, Mt Somoro, 1400 m, Aug. 1961, *Darbyshire* 314 (CANB); *East Sepik Province:* Angoram District, Maraumanda (Net area), Korosameri Census Division, 750 m, terrestrial, Aug. 1980, *Reeve* 544 (LAE); *Madang Province:* Finisterre Mountains, 1300 m, epiphyte, Jan. 1909, *Schlechter* 19172 (B, destroyed); *Morobe Province: Maboro Mountains,* 1300 m, epiphyte, May 1909, *Schlechter* 19539 (B, destroyed, BM, K, L, NSW); Dischore Mountains, Waria valley, 1300 m, epiphyte, June 1909, *Schlechter* 19722 (L, NSW); *Enga Province* Porgera District, Korombi, Paiela, 1800 m, epiphyte on *Nothofagus*, Feb. 1977, *Reeve* 228 (LAE).

Bougainville: Kupei near Kieta, 1800 m, Oct. 1960, *Womersley* NGF 13397 (LAE); Lake Loloru crater, 20 m N. of Buin, 1500 m, Aug. 1964, *Craven & Schodde* 333 (CANB, LAE), Pavairi, 700 m, Jan. 1967, *Lavarack & Ridsdale* NGF 30552 (LAE); Lake Loloru, 1650 m, epiphyte, Feb. 1967, *Lavarack & Ridsdale* NGF 31291 (AMES, BO, BRI, CANB, K, L, LAE, SING).

Notes: The flowers of *D. concavissimum* vary from bright magenta-purple with an orange lip to forms having a purple-pink mentum and white or yellowish sepal tips, petals and lip. The bright purple and orange form is quite striking when encountered in the forest and was once referred to by the nickname *Dendrobium* 'Mary's Horror' (Slade, 1964). This impressive colour form is found in Irian Jaya (*de Kock* 203), mainland Papua New Guinea (*Reeve* 228) and Bougainville (*Lavarack & Ridsdale* NGF 31291). The prettiest forms are those with wide opening flowers (Figure 1).

The lip has small, somewhat triangular side lobes and a variably inflexed apex. In our opinion this variation accounts for the differences between the lips of *D. chrysoglossum* and *D. fornicatum* as illustrated by Schlechter (1928). It appears that he was unaware, when describing these taxa in 1912, of Smith's *D. concavissimum* described a year earlier. Both species are treated here as conspecific with *D. concavissimum.*

The synonym *D. chrysoglossum* has been commonly misapplied to the highland form of *D. pseudoglomeratum.* These two species are markedly different in vegetative habit, the stems of *D. concavissimum* being cylindrical, slender and distinctly branched. The flowers are usually smaller and, although similarly shaped, they lack the triangular shaped rostellum of *D. pseudoglomeratum.*

A single plant was collected in flower at Paiela, Enga Province in early 1977 and has grown quite well in a basket at Laiagam during the past 5 years. However the plant has never flowered in cultivation which is very unusual. Although the area around Paiela has been revisited many times since 1977 no further plants of *D. concavissimum* have been found. One interesting characteristic of the living plant is the orange-coloured root tips, a feature noted in several epiphytic orchids which grow on *Nothofagus* trees as the preferred 'host'. Most New Guinea Dendrobiums have green root tips. Figure 2 shows this plant (*Reeve* 228) when it was first collected. Judging from the texture of the flowers they probably last several months.

2. **Dendrobium glomeratum** Rolfe in Kew Bull., 155 (1894); Gard. Chron., 1:653, Fig. 80 (1894), non J.J. Sm. (1911); Sander, Orchid Guide, 70 (1901); Kraenzlin in Engler, Pflanzenr., 45:114 (1910). Type: East Malaysia, Moluccas, hort. *James Veitch & Sons s.n.* (K, holo.!). The type sheet also contains several collections of flowers, probably from different plants, dated December 1893, February 1894 and 1901 and November 1904 (Figure 3).

D. crepidiferum J.J. Sm. in Bull. Jard. Bot. Buitenz., Ser. 3, 5:89 (1922); *op. cit.,* Suppl. 2, 3-4: t.78, fig. 4 (1934). Type: East Malaysia, 'Ternate Toramadiahi, c. 1200 m, epiphytical in forest', 24.11.1920, *V.M.A. Beguin* 1190 (BO, holo.; L. iso.!), **syn. nov.**

An epiphytic *herb* up to 1m high. *Stems* ± cylindrical, flexuous towards apex, becoming sulcate with age, 10-100 x 0.3-0.7 cm, nodes 1.5-3 cm apart. *Leaves* lanceolate, acute, 3.5-10.5 x 0.5-1.85 cm. *Inflorescences* usually 3-6-flowered (sometimes up to 10), subdense (*"laxum congestis"*), arising from both leafy and leafless stems; *peduncle* and *rhachis* short, to 1 cm long. *Bracts* ovate to oblong-elliptic, acuminate, membranous, 0.5-1 cm long. *Flowers* large, bright magenta or purple-pink with a bright orange to deep orange-red labellum, 3-5 cm long, with dorsal sepal and petals tending to be somewhat reflexed. *Pedicellate ovary* 6-grooved, 15-30 mm long. *Dorsal sepal* oblong-elliptic to lanceolate, obtuse to acute, 16-29 x 5-9 mm; *lateral sepals* obliquely ovate-oblong to triangular, obtuse to acute, 25-46 x 7-13 mm. *Petals* oblong to lanceolate, obtuse, 13-29 x 5-9 mm. *Labellum* oblong-spathulate, usually with a V-shaped cross-ridge (sometimes indistinct and often difficult to see on dried specimens, if not completely absent), apex cucullate and somewhat pointed with inflexed margins erose-denticulate, 18-28.5 x 6-7 mm. *Column* approx. 5 mm long with rostellum rectangular; *column foot/mentum* 11-19 mm long (in sideview the mentum is pointed at the apex and often curved forwards — see Figures 3 & 5). *Anther* ovate, cucullate, emarginate, c. 4 x 4 mm.

Distribution: The original importation into England by Mssrs James Veitch & Sons was reputedly from the Moluccas. There was some doubt about this as it was known that collectors employed by orchid firms often gave false localities for their specimens to deceive competing collectors, and the *Gardener's Chronicle* article gave New Guinea as the provenance for *D. glomeratum.* However later collections have confirmed that this orchid grows in the mountains of the North Moluccas between 950 and 1500 m.

List of Collections:

North Moluccas (Indonesia): Ternate, Toramadiahi, 1200 m, Nov. 1920, *Beguin* 1190 (BO, L); Halmahera, Kie Matoeboe, 1400 m, July 1926, *Lam* 3734 (L); Halmahera, Mt Jailolo, 950 m, Oct. 1974, *de Vogel* 3373 (L); Bacan (or Batjan) Island, Mt Sibela, near Waiaua, 1500 m, Oct. 1974, *de Vogel* 3600 (BO, CANB, K, KEP, L, LAE).

Notes: J.J. Smith (1922) placed his *D. crepidiferum* in section *Calyptrochilus* and commented as follows:

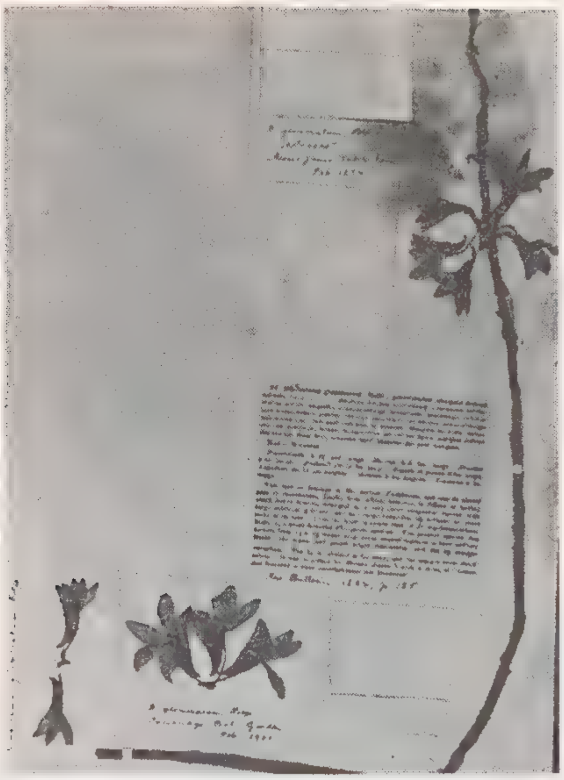


Figure 3.
Dendrobium glomeratum Rolfe. Type sheet in Kew Herbarium (*J. Veitch & Sons s.n.*).

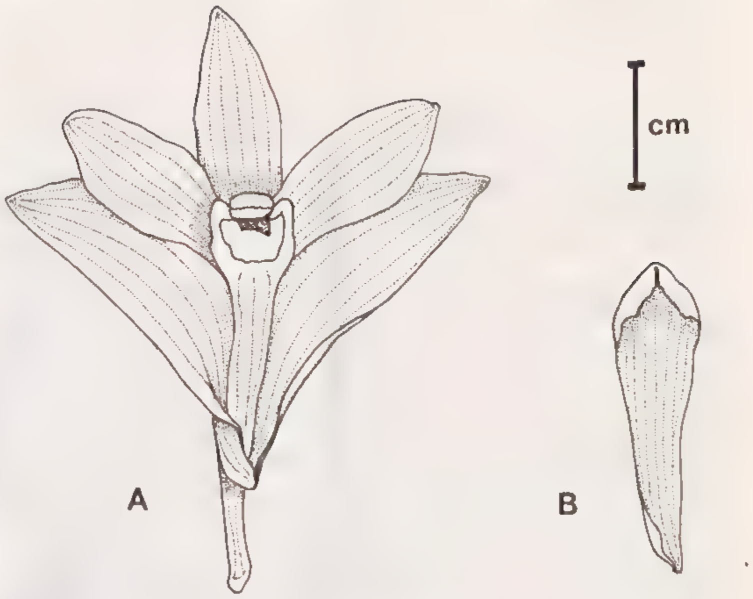


Figure 4.
Dendrobium glomeratum Rolfe. Flower and labellum from the Holotype drawn by J.J. Wood.

"In the form of the flowers this recalls to mind *D. hasseltii* (Bl.) Lindl. and *D. glomeratum* Rolfe as figured in *Gard. Chron.* 1894, 1, 653. The lip is rather narrow in the section and approaches *Pedilonum* very closely. Indeed the sections *Pedilonum, Calyptrochilus, Calcifera, Platycaulon* and others are not equivalent to such ones as *Desmotrichum (= Flickingeria), Diplocaulobium, Grastidium* etc. but should be regarded as subsections."

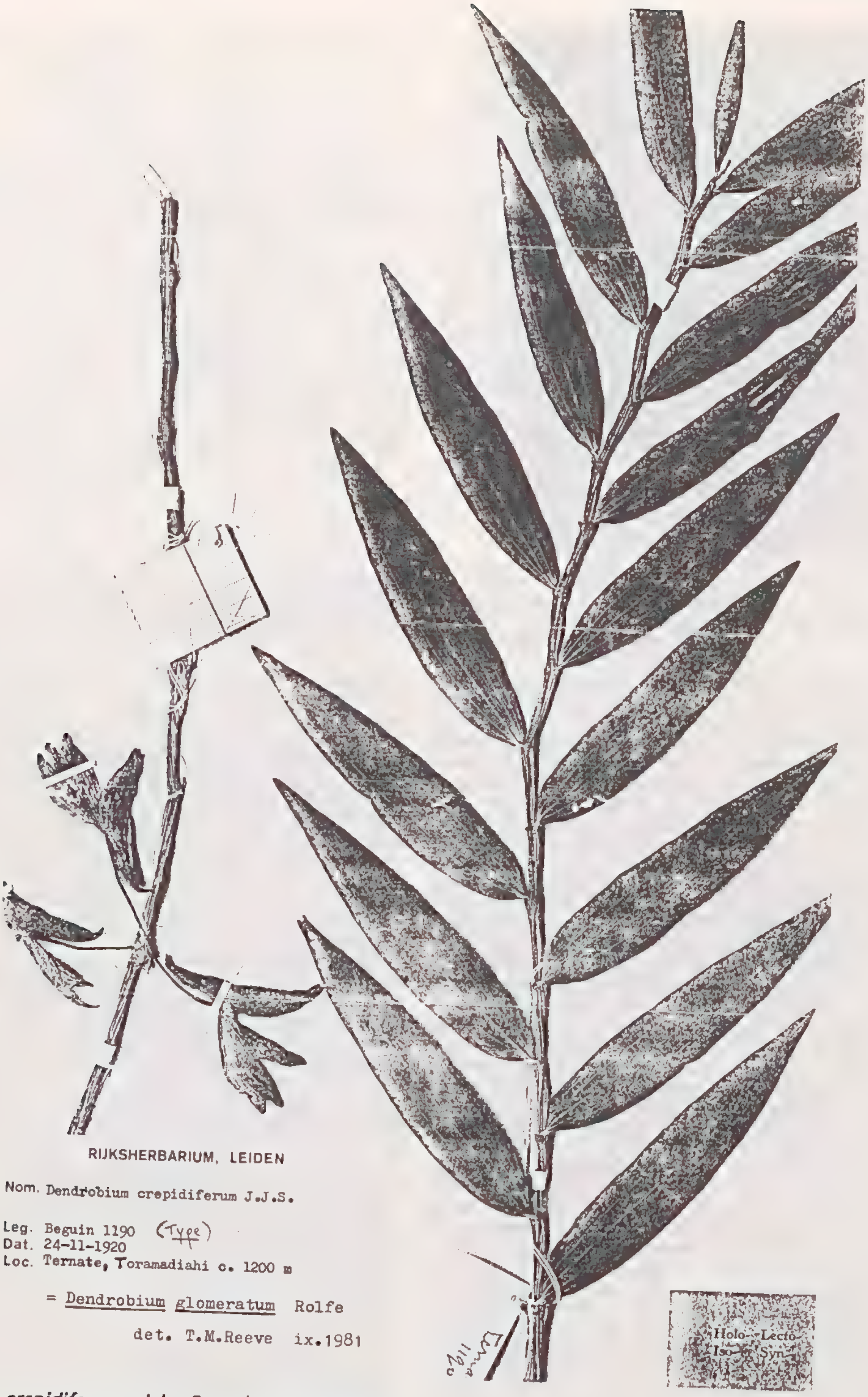
The main difference between the flowers of *D. glomeratum* and *D. crepidiferum* is the V-shaped cross-ridge on the inside of the lip which is apparently lacking in the former but reasonably distinct in the latter. The two collections of de Vogel (3373 & 3600) also show variation in the size of this ridge. It has been observed with some section *Oxyglossum* species e.g. *D. delicatulum* Krzl. that indistinct cross-lamellae are often very difficult to locate once flowers have been dried. Where the base of the lip is strongly saccate e.g. *D. concavissimum* and *D. pseudoglomeratum*, the cross-ridge is generally more pronounced. In other species such as *D. glomeratum* where the lip is quite narrow and the base is not markedly saccate, the cross-ridge is less distinct. Therefore it should not always be regarded as an important characteristic for the taxonomist.

The confusion over the identity of *D. glomeratum* partly arose because of the poor type material prepared from a cultivated plant without leaves. Also J.J. Smith (1911) published a detailed latin description and drawing of *D. pseudoglomeratum* which he mistakenly took for Rolfe's plant (Figure 6). *D. glomeratum* is so far unrecorded from New Guinea, but may well occur in the western part of the island, adjacent to the Moluccas. Little is known of the cultivation and flowering of this species. Its large brightly coloured flowers make, to quote from the *Gardener's Chronicle* of 1894, "a Dendrobium of singular appearance."

3. Dendrobium pseudoglomeratum *Reeve & J.J. Wood* **sp. nov.** affinis *D. glomerato* Rolfe sed caulibus fusiformibus crassioribus, foliis subacutis usque obtusis, racemis densius multifloris, mento obtuso, rostello triangulari differt, *D. roseipedi* Schltr etiam affine, sed habitu majore, foliis latioribus, floribus aliter coloratis, labelli apice multo magis inflexo, rostello triangulari differt. Typus: Papua New Guinea, West Sepik Province, Telefomin District, 1500 m, Sept. 1966, *D. Frodin* in NGF 28527 (LAE, holotypus! L, isotypus!).

D. glomeratum sensu J.J. Sm. in Nova Guinea, 8:566 t. XCIII, fig. B (1911), non Rolfe (1894).

A robust epiphytic *herb* up to 1.1 m high. *Pseudobulbs* slightly swollen at the base then uniformly fusiform except for the lower part which is sometimes distinctly slender, older stems slightly sulcate and covered with scarious leaf sheaths, new stems leafy for their whole length, 10-110 x 0.5-1.8 cm, nodes 1-4.2 cm apart. *Leaves* semi-erect, ovate to oblong-lanceolate, subacute to obtuse, sometimes obliquely emarginate, amplexicaul, 2.5-13 x 0.8-3.0 cm. *Inflorescences* usually fairly dense, many-flowered, arising from the upper nodes of defoliated stems; *peduncle with rhachis* up to 3.5 cm long. *Bracts* rotund to obovate-spathulate, often apiculate, concave, membranous, 0.3-1 cm long. *Flowers* non-resupinate, with labellum uppermost, usually widely opening, glabrous, size variable even on a single raceme, 2-4 x 1.5-3.6 cm, tepals bright mauve-pink, labellum bright orange near apex, whitish below. *Pedicellate ovary* 6-grooved, 13-32 mm long. *Dorsal* sepal ovate, obtuse, 10-18 x 6-10 mm; *lateral sepals* with basal section fused to column foot, free part ovate, obtuse, 18-36 x 7-14 mm. *Petals*, obovate, obtuse, 9-18 x 5-9 mm. *Labellum* clawed, spathulate, entire, apical margin slightly involute and often erose-denticulate, with a prominent V-shaped cross-ridge two-thirds of the way down, the basal third strongly saccate and adnate to the column foot, 18-31 x 9-15mm when expanded. *Column* c. 4 x 4 mm, white; *rostellum* triangular, projecting downwards over the stigmatic area; *column foot/mentum* 10-20 mm long with enclosed spur-like part of the mentum 5-10 mm long, apex obtuse. *Anther* cucullate, quadrangular, white, c. 2 x 2 mm; *pollinia* 4, greyish-green, c. 2 mm long.



RIJKSHERBARIUM, LEIDEN

Nom. Dendrobium crepidiferum J.J.S.

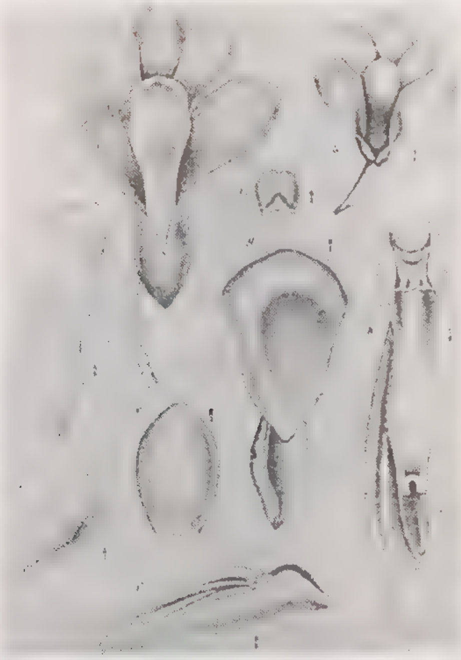
Leg. Beguin 1190 (Type)
Dat. 24-11-1920
Loc. Ternate, Toramadiahi c. 1200 m

= Dendrobium glomeratum Rolfe

det. T.M.Reeve ix.1981

Figure 5.
Dendrobium crepidiferum J.J. Sm. (a synonym of *D. glomeratum* Rolfe). Photocopy of the Type sheet in Rijksherbarium, Leiden (*Beguin* 1190). Kindly supplied by Dr E.F. de Vogel.

Figure 6.
Dendrobium pseudoglomeratum Reeve and J.J. Wood as figured by J.J. Smith in 1911 from living material collected in Irian Jaya and cultivated in the gardens at Bogor, Indonesia (*Nova Guinea* 8: Tab. XCIII, fig. B). Two good colour photographs of this species are shown on page 40 of Andree Millar's book (1978), "Orchids of Papua New Guinea".



Distribution: *D. pseudoglomeratum* is widespread in mainland Papua New Guinea between 1100 and 1800 m, and has been recorded twice from Irian Jaya. This species has been collected at sea level by Mrs Andreé Millar (NGF 22893) and no doubt it grows in many mid mountain areas below 1100 m. Such a wide altitude range is not uncommon for New Guinea *Dendrobium* species, e.g. *D. purpureum* Roxb. is found from sea level to 1800 m and *D. macrophyllum* A. Rich. up to 1700 m.

List of Collections:

Irian Jaya: Lorentz Noord-Fluss Expedition, 1909, cult. Bogor no. 43 R, *Rachmat s.n.* (BO); cult. Bogor. no. 254 B & 268 B, *Branderhorst s.n.* (BO).

Papua New Guinea: West Sepik Province: Telefomin District, 1500 m, Sept. 1966, *Frodin* NGF 28527 (L, LAE); Telefomin District, Aksapmin, 1550 m, Oct. 1968, *Henty, Isgar & Galore* NGF 41566 (LAE); *Enga Province:* Porgera District, Korombi, Paiela, 1800 m, July 1977, *Reeve* 223 (K, LAE); *Southern Highlands Province:* Tari District, Tepape, 1800 m, Aug. 1979, *Reeve* 301 (CBG, E, K, L, LAE); Kagua District, Batri. 1300 m, Aug. 1981, *Reeve* 578 (LAE); *Western Highlands Province:* Baiyer River, 1200 m, Sept, 1967, *Millar & Vandenburg* NGF 35216 (LAE); *Eastern Highlands Province:* Kainantu District, 1500 m, Oct. 1957, *Robbins* 939 (CANB, L, LAE); Kainantu-Okapa road, 1800 m, Nov. 1963, *Hartley* 12444 (LAE); Kainantu District, Obura, 1600 m, June 1972, *Hays* 413 (LAE); *Morobe Province:* Island near Kui, S.E. of Lae, sea level, May 1967, *Millar* NGF 22893 (K, LAE); Wau District, Minnoa Creek, Upper Watut, 1200 m, April 1970, *Kairo* NGF 47684 (LAE).

Small flowered form: Eastern Highlands Province: Kassam Pass, 1370 m, Oct. 1959, *Brass* 32347 (LAE); *Morobe Province:* Kauli Creek, near Wau, 1350 m, Aug. 1963, *Millar & Holttum* NGF 15802 (LAE). *Note:* These two collections have flowers which are only 1.2-1.7 cm long in the dried state. The plants are morphologically identical and have so far only been recorded from these two provinces of Papua New Guinea. Fresh material is required in order to determine their status.

Notes: D. pseudoglomeratum has been incorrectly referred to as both *D. chrysoglossum* Schltr and *D. glomeratum* Rolfe which may account for its true status having remained misunderstood for so long. The accompanying table illustrates the differences between the three taxa.

Cultivation and Flowering: In Papua New Guinea *D. pseudoglomeratum* grows quite well at Laiagam (2200m) even though here it is well above its natural altitudinal limit. It flowers most of the year but is at its best from May to October. A good plant will flower two or three times in a year, the flowers lasting up to 5 weeks. It is one of the most beautiful orchid species in New Guinea and the sight of a mass of bright pink and orange flowers arising from seemingly lifeless canes is quite striking. At Laiagam the plants prefer 30% shade and grow equally as well on tree-fern slabs as in baskets with a coarse mix of washed pine bark and charcoal. It appears to be a hardy species and propagates quite well from stem cuttings.

Pollination: At Laiagam some interesting observations have been made concerning the pollination of *D. pseudoglomeratum* by the common highlands honeyeater, *Melidectes belfordi* (Figure 8). Adjacent to the main orchid houses there are some *Hibiscus* shrubs and each morning and afternoon one or two of these birds visit the new flowers seeking nectar. The honeyeaters are very inquisitive and examine many different flowers in the garden including citrus and even *Pinus patula.* In mid-1980 a single flowering plant of *D. pseudoglomeratum* was hung in a citrus tree near the *Hibiscus* to see if the honeyeaters would be attracted. A few days later one of the birds was observed visiting the flowers. Although

TABLE OF DISTINGUISHING CHARACTERISTICS

Species:	*D. concavissimum*	*D. glomeratum*	*D. pseudoglomeratum*
Stems:	Branched, cylindrical	Unbranched, cylindrical	Unbranched, fusiform
Inflorescence:	On both leafy & leafless stems, many-flowered, dense	On both leafy & leafless stems, few-flowered, open to subdense	On leafless stems only, many flowered, subdense to dense
Flower length:	1-2 cm.	3-5 cm.	2-4 cm.
Labellum apex:	Inflexed	Distinctly cucullate	Inflexed
Mentum apex:	Obtuse to truncate	Pointed (acute)	Obtuse
Rostellum:	Rectangular	Rectangular	Triangular
Distribution:	New Guinea & Solomon Islands	North Moluccas	New Guinea

Figure 7.
Dendrobium pseudoglomeratum Reeve and J.J. Wood. Photograph of *Reeve* 301 in cultivation at Laiagam, September 1981.

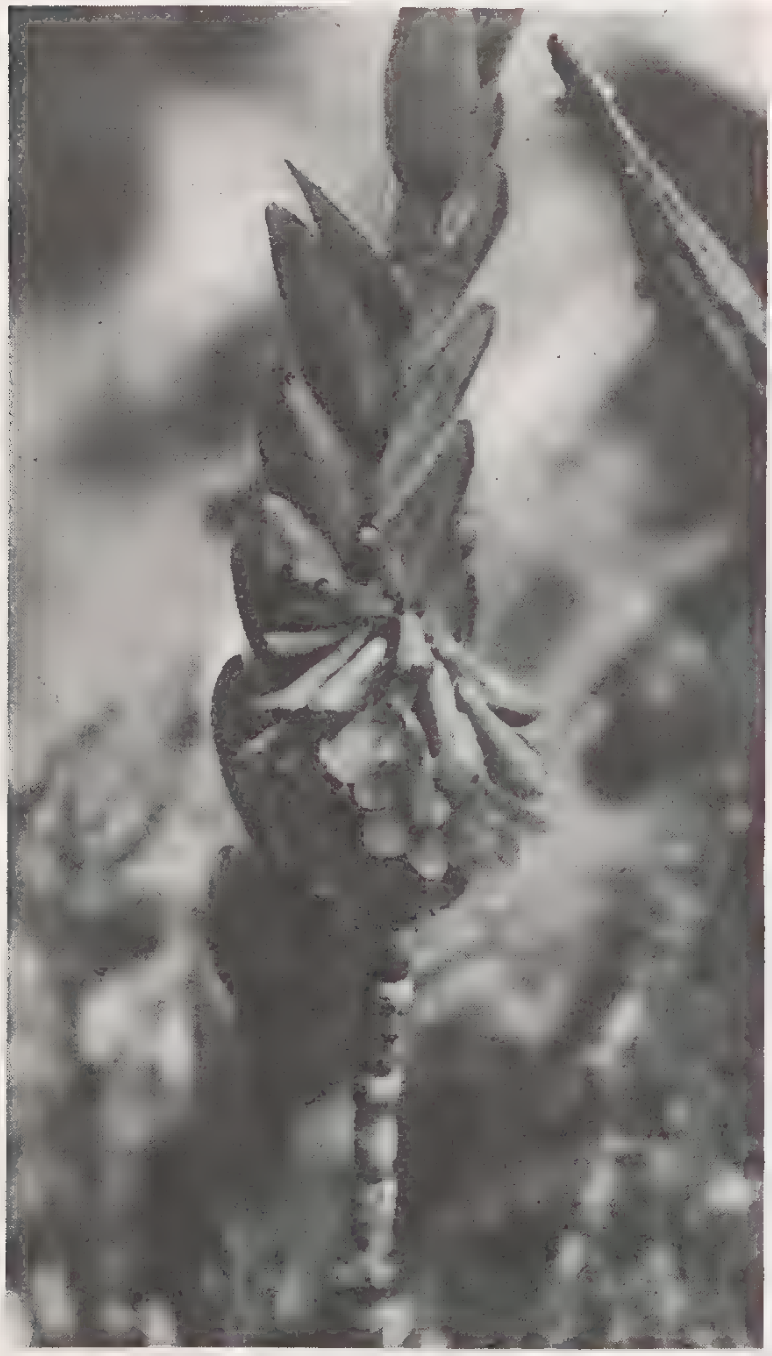
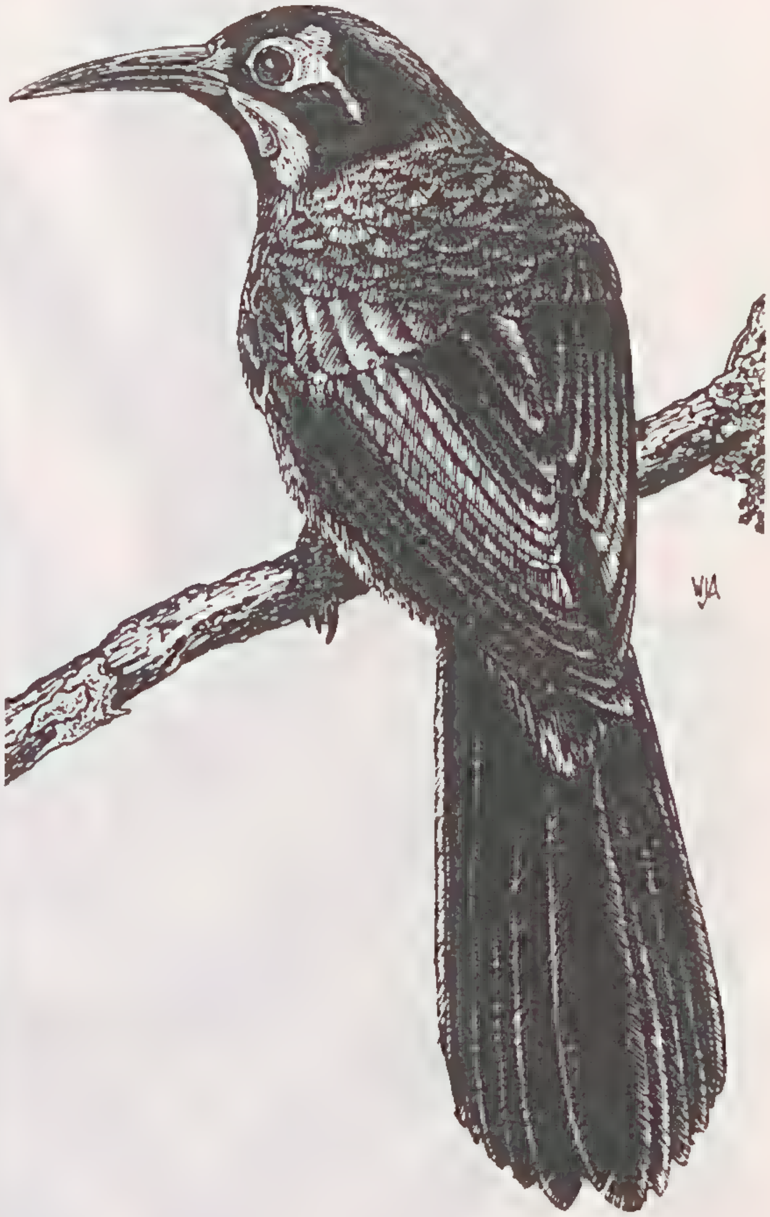


Figure 8.
Melidectes belfordi. This honeyeater (about 25 cm long) is a common bird of the New Guinea highland forests and is known to pollinate *D. pseudoglomeratum*. Reproduced with kind permission of the Director, Wau Ecology Institute, P.N.G. from p. 139 of Beehler (1978), "Upland Birds of Northeastern New Guinea" (illustrated by William J. Adams).



some anthers and pollinia were dislodged no pollination resulted. However in October 1980 when several plants were in full flower, the honeyeaters flew right into the main shadehouse to obtain nectar from the flowers. The result was that one or two seed pods were set on most of the racemes resulting in up to six pods on each plant. This represented a success rate of only 3 to 5% but it was ideal for the plants in only having to support a few pods each. This observation was doubly interesting as all attempts at Laiagam to pollinate this species artificially have been so far unsuccessful. The seed pods took four months to mature.

Acknowledgements:

We thank Dr E.F. de Vogel of the Rijksherbarium, Leiden, Netherlands, for providing information on the collections from the Moluccas, and the Director of the Wau Ecology Institute, Papua New Guinea, for permission to use W.J. Adams' illustration of *Melidectes belfordi* from their Handbook on Upland Birds by B. McP. Beehler.

References:

Beehler, B. McP. (1978) Upland Birds of Northeastern New Guinea: A guide to the Hill and Mountain Birds of Morobe Province. (Wau Ecology Institute Handbook No. 4).

Millar, A.N. (1978) Orchids of Papua New Guinea: an introduction. (Canberra: A.N.U. Press).

Slade, G.H. (1964) Collecting Dendrobiums in New Guinea. *Australian Orchid Review* 29 (1): 22;

February 1982

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Dendrobium sect. *Ceratobium* in the Pacific Islands

by P.J. Cribb

Summary: Eleven species of *Dendrobium* sect. *Ceratobium* of which three are new are found in the Pacific Islands east of Bougainville. A provisional key is provided for their identification.

The orchids of the Pacific Islands are still poorly known, the only recent account being that of Hallé (1977) for New Caledonia. This has not prevented many species from being introduced into cultivation and the subsequent use of some in crossing programmes. Needless to say, a great deal of nomenclatural confusion has resulted and, owing to their popularity, species of *Dendrobium* sect. *Ceratobium* are among the worst offenders.

A full revision of the Pacific Island species of this section will shortly be published in the Kew Bulletin (Cribb, in press). This includes the description of three new species referred to in the following key as *sp. nov.* A, B & C. Several points are worth emphasising here:

a) *D. tokai* is confined to Fiji and Tonga and the species from Samoa often cultivated under that name or as *D. gouldii* is a new species;
b) the identity of *D. macranthum* which is frequently cultivated under one of its synonyms or as *D. gouldii* is established;
c) *D. sylvanum*, *D. antennatum* and *D. conanthum* are species which extend to New Guinea from the Pacific and therefore have acquired several synonyms en route;
d) Finally, in the sense accepted here, *D. gouldii* from the Solomon Islands is considered distinct from the New Guinea species *D. lineale* Rolfe.

For a more comprehensive account and for the names of the three new species reference should be made to the Kew Bulletin article mentioned above.

Artificial Key to *Dendrobium* sect. *Ceratobium* in the Pacific.

1. Bracts sheathing; pedicel emerging from the rhachis a few mm. above the axil of a bract; leaves lanceolate. .... 1. *D. antennatum* (Solomons)

1. Bracts free, triangular to lanceolate; pedicel emerging from axil of a bract; leaves oblong, elliptic or elliptic-ovate:

2. Sepals and petals less than 1.5 cm. long; lip mid-lobe as broad as long .... 9. *D. spathulatum* (Fiji only)

2. Sepals and petals more than 1.8 cm. long; lip mid-lobe longer than broad:

3. Side lobes of lip with transverse rugulose ridges at right angles to the veins; sepals and petals mostly twisted and contorted, often heavily suffused with maroon 2. *D. conanthum* (Solomons, Vanuatu)

3. Side lobes of lip not as above; petals twisted or straight but not contorted; sepals reflexed or straight but not contorted;

4. Mid-lobe of lip oblong, with a markedly undulate margin. Lip very narrow, less than 1 cm. broad .... 10. *D. sylvanum* (Solomons, New Caledonia)

4. Mid-lobe of lip lanceolate, ovate, elliptic or obovate lacking markedly undulate margins:

5. Lip with callus ridges not or only obscurely raised at their apices on the mid-lobe:

6. Petals 3-4.5 cm. long; mentum 7.5 mm. or more long:

7. Flowers pale yellow to lime-green, faintly marked with purple on side lobes of lip and with a lilac-flushed callus; petals linear, less than 3.5 mm. broad; lip mid-lobe lanceolate .... 5. *D. macranthum* (Santa Cruz, Vanuatu & New Caledonia)

7. Flowers white with a heavily purple-veined lip; petals oblanceolate, more than 5 mm. broad; lip mid-lobe oblong-elliptic .... 6. *D.* sp. nov. A. (Rennel & Bellona Isles only)

6. Petals less than 2.6 cm. long; mentum 5 mm. long .... 4. *D. hornei* (Fiji only)

5. Lip with 1 to 3 raised ridges on the mid-lobe forming prominent flap-like lamellae:

8. Lip with one prominent flap-like lamella on the mid-lobe; mid-lobe of lip 1.4 cm. long or more; sepals and petals neither recurved nor twisted 11. *D. tokai* (Fiji and Tonga only)

8. Lip with three raised flap-like lamellae on the mid-lobe; mid-lobe of lip less than 1.4 cm. long; often recurved; petals commonly twisted:

9. Lip 2 cm. or less long; sepals not recurved; petals neither spreading nor twisted; flowers not opening widely, yellowish green .... 7. *D.* sp. nov. B.

9. Lip 2.4 cm. or more long; sepals recurved; petals spreading often twisted; flowers opening widely, white to yellow often flushed with mauve or maroon on the petals and veined with purple on the lip:

10. Petals not or scarcely twisted, 2.2-2.7 cm. long; lip mid-lobe 1.2-1.4 cm. long; mentum 0.9-1.2 cm. long .... 8. *D.* sp. nov. C. (San Cristobal only)

10. Petals once or twice twisted, commonly over 3 cm. long; lip mid-lobe less than 1.2 cm. long; mentum commonly 0.9 cm. long or less. .... 3. *D. gouldii* (Solomons and Vanuatu)

Reference

Halle, N. (1777). Orchidacees in Aubreville, A. & Leroy, J., Flore de la Nouvelle Caledonie 8. Paris.

Acknowledgements

I would like to thank G. Hermon Slade, Geoff Dennis, John Pederson, Alasdair Morrison, Tom Reeve, Frank Ginate, Don Blaxell, Joe Betts, Dr. N. Hallé, the Australian Orchid Foundation and many others for their help in the course of my work on this study.

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conanthum Schltr 2
d'albertisii Rchb.f. = 1
gouldii Rchb.f. 3
*hornei*Rchb.f. 4
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warianum Schltr = 10
woodfordianum (Maid.) Schltr = 3

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THE BASICS OF NATIVE ORCHID GROWING — 4

by Don Barnham

This article deals further with the genus *Dendrobium* and the species discussed are those that have, more or less, pendulous terete leaves extending from their wiry stens. These plants, having a creeping form of growth, are more suited to slab cultivation; but at least one of them is adaptable to pot or basket culture. Details of both methods are given.

D. teretifolium. A species of three varieties: var. *teretifolium* (the type variety), var. *fairfaxii* (which has two forms) and var. *fasciculatum.*

Some forty or so years ago the most common of these three varieties to be seen in the gardens of Sydney's suburbia was var. *teretifolium*, mainly because at that time it was fairly common in its natural habitat along the eastern lowlands of N.S.W. Although there were restrictive laws on the collecting of native flora in those days there was very little enforcement of those laws; so it was just a matter, after having found a plant to ones liking, of hacking off the limb of the tree on which it was growing and taking it home to be hung up in a bushhouse where, in most cases, it stayed until such times as the bark on the limb decayed and fell away from the timber taking the orchid with it. Usually there was little incentive to re-establish the fallen orchid on to a new host as it was just a matter of another trip to the bush to get a replacement plant.

Many fine specimen plants have been lost in this way and today it is a rarity to see a plant of this variety reaching the proportions of a metre or more in length as was fairly common at that time.

Var. teretifolium has become rare in its natural habitat through the encroachment of civil expansion. Its natural host is mostly the "Swamp She-oak" (*Casuarina glauca*) although it is not resitrcted to this tree as, apart from other trees with permanent bark, it has been recorded as growing on rocks. It favours a situation close to water, often overhanging a stream or in proximity to coastal lakes. This orchid prefers a filtered light situation where the air is mostly cool and moist and the temperature range is moderate, although, by its location, it may be subject to on-shore wind conditions and it can be argued that its growth form, (terete leaves on thin flexible stems) has been developed by evolution to endure buffeting by coastal gales.

In cultivation this orchid should be under 50% shade-cloth, or similarly placed away from strong sunlight. There should be plenty of air movement from the north-east to south-east direction but protected on the other sides from the cold blasts of winter and the hot north-westerly winds of summer.

If remounting is required there are several types of material that can be used, such as tree-fern trunk, a slab of Ironbark bark or a Paperbark log. Of these perhaps the Paperbark log (*Melaleuca* spp.) is best providing it has a good thickness of bark (at least 6 mm (¼") thick) and the diameter of its timber is not less than 100 mm. Always allow plenty of scope for root development as all varieties of this species need to make an extensive root system to support improving leaf formation, for it is only through good leaf growth that bountiful flowering will result.

Mount the plant no lower than the centre of the log as these plants grow downwards as a rule and therefore allowance should be made for advancement. For the average plant the mounting needs to be at least 500 mm long. Unfortunately the timber section of a Paperbark log is not very durable as it is prone to rotting out in the space of a year or two, particularly at its bottom end where it remains wet longer than the rest of the log. There is a call for experimentation in this regard and perhaps it is possible to treat the timber with a wood preservative for greater durability, but at the same time bearing in mind that it would be advisable to keep the bark free of any such preservative as it may in time affect the root system of the host plant. It is a strange thing that although the timber of most Melaleucas is non-durable their bark is the reverse, lasting in good order for many years under the same conditions.

As an alternative to the suggestion of using a preservative to improve the timber's durability it is quite practical to remove completely the bark from the timber with the idea of attaching it to a more stable base. In removing the bark it is advisable that it be taken in one piece and that the full depth be removed right down to and including the woody tissue layer between the bark and the timber. It is usually necessary to carry out this operation on green timber because it is generally hard to remove bark from dry timber. If the bark has been removed from green timber it will have to be dried before sticking it to another surface. Lay the bark out flat in a shady area under cover from the weather and place weights on it to prevent it from curling. Allow at least six or seven days for the drying process in summer and a bit longer in cold weather. It will also shrink slightly as it dries out. It can then be glued to a flat surface such as an old hardwood fence paling, both sides may be surfaced with bark thus giving a greater root run for the orchid. Make sure the bark has good contact all over with the timber and is kept that way with weights whilst the adhesive is drying. Ensure the adhesive is suitable for the purpose, i.e. that it is waterproof.

As an alternative to gluing, galvanized clouts can be used for fixing the bark to a timber base but of course the timber will need to be thicker than the average paling to accommodate the clouts. They should be spaced no more than 50 mm apart around the perimeter of the bark and staggered to avoid splitting the wood, but need only to be spaced intermittently within the internal area.

Var. fairfaxii forma fairfaxii is very similar in growth form to var. *teretifolium*, the main differences being that the leaves are usually thinner but longer and the whole plant is more pendulous. The flowers are usually borne in pairs but three or four together are sometimes produced whereas var. *teretifolium* may have as many as four racemes from the one stem with each raceme carrying ten or more flowers thus making a cluster of up to fifty. There is also a difference in the coloration of the flowers. Those of var. *teretifolium* are mostly pure white while those of var. *fairfaxii* forma *fairfaxii* are more creamy-white and are heavily striated with reddish-brown.

Var. fairfaxii forma aureum has a growth form very similar to that of forma *fairfaxii* though the leaves are generally slightly thinner. The main difference is in the colour of its flowers, which are of a golden hue. Some forms may have flowers of a pale greenish-yellow but the most attractive ones are those that produce flowers that are a deep golden yellow with reddish-brown striations similar to the markings of the flowers of forma *fairfaxii.*

Both forms of var. *fairfaxii* are plants of the high altitude rainforest country where they may, in secluded gullies, be seen cascading down as much as two metres from their lofty anchorages amidst the epiphytic mosses and ferns cladding the massive boughs of some forest monarch, where it is always cool and moist and although there would be constant air movement in this environment it would rarely be turbulent.

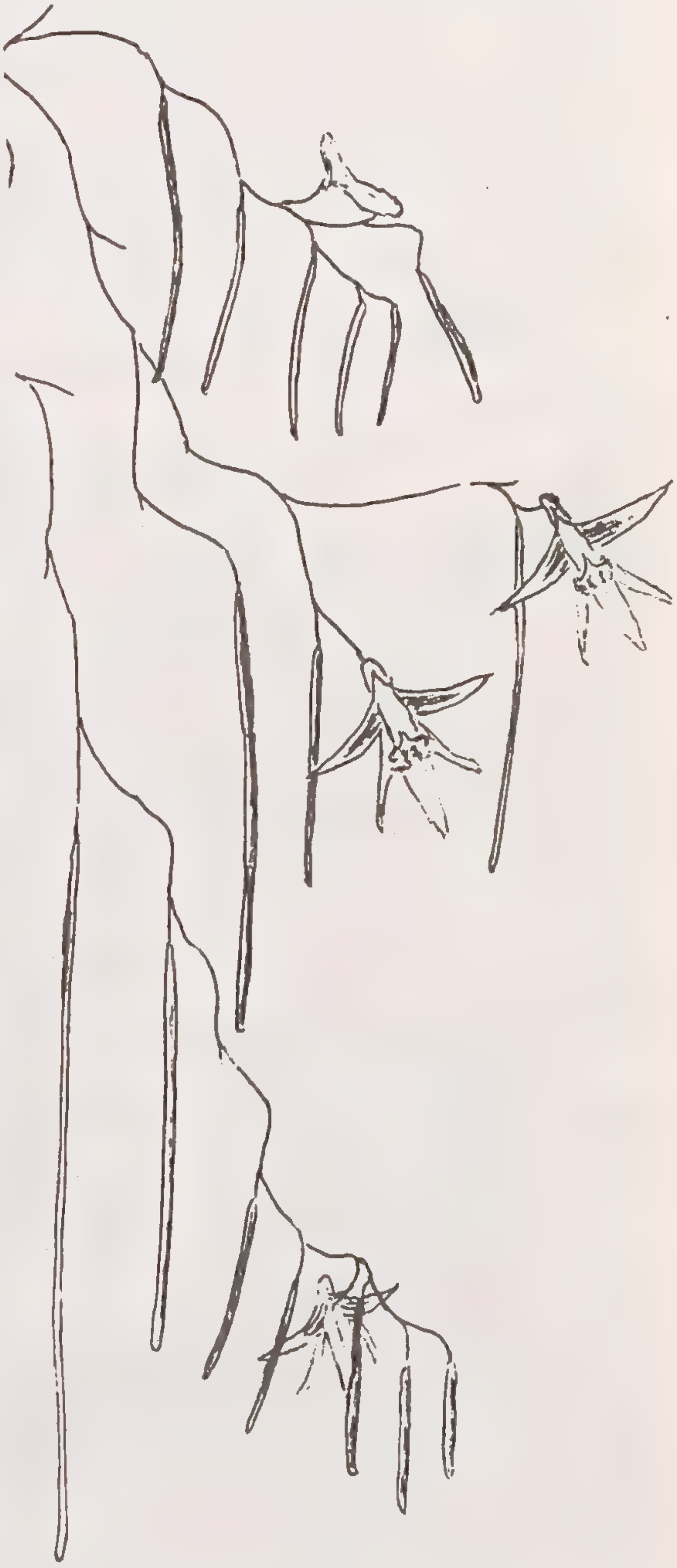
Their range extends from mid-N.S.W. to southern Queensland and within this area forma *fairfaxii* is a common plant whereas forma *aureum* can be classed as a rarity as it has a sparse distribution within its range especially so at its southern limits.

Var. fasciculatum. Although central Queensland is the natural habitat of this plant and it has been recorded as having been discovered growing at rather low altitudes it is advisable to treat it as a cold grower when in cultivation in the Sydney area. Plants of this variety, when available from N.S.W. nurserymen, are said to come from a high altitude area such as the Atherton Tableland. It differs from the other varieties in that its leaves are generally much thicker and often longer and its growth pattern, although similar to var. *teretifolium*, has a very pronounced sideways form of development.

It gets its varietal name from the fact that its flowers are formed into a close cluster, or fascicule, not nicely spread out on the raceme like those of var. *teretifolium.*

Give this orchid protection from the cold winter winds but otherwise treat it as has been advised for the other varieties.

D. tenuissimum. It can be justly claimed that this plant is the most charming of all of Australia's native orchids. It is dainty in formation with tenuous, near cylindrical leaves, of no more than 3 mm diameter and rarely longer than 100 mm, that suspend gracefully from the end of thin wire-like branching stems. The whole plant seldom extending more than 400 mm from base to extremity. Its flowers, usually borne singly, are mostly an apple-green colour with a white labellum that is blotched with purple. The mid-lobe of the labellum is curved downwards and rolled under. It has crimped edges.



D. tenuissimum Rupp — from cover design by J.J. Betts.

This orchid is not a plant of the open forest, but one favouring a cool and moist situation that is found only in secluded coastal gullies or rainforests.

It is not a common plant and is found only in isolation, usually low down on the trunk or limb of a moss encrusted tree. Therefore to successfully cultivate this orchid a condition as near as possible to the plant's natural environment must be maintained. It will not prosper in a state of heat or low humidity. It should do quite well when mounted on a paperbark log or slab as has been previously described in the paragraph dealing with *D. teretifolium* var. *teretifolium*. It will grow well on such material as a slab of hard tree-fern fibre or pressed cork, but whatever is used it would be advisable to back the material with something to reduce drying out.

D. mortii. One may class this orchid as the "Odd One" of the terete leaved Australian dendrobiums for it is usually an untidy grower. Its stems are more robust and its leaves are slightly thicker and longer than those of *D. tenuissimum*, and they do not hang gracefully as with that species. The whole plant may have an unruly appearance with its stems and leaves extending forward as well as downward.

Its flowers, generally displayed in pairs, are more or less green to greenish-brown with a white labellum, and they rarely open to their full extent thus adding to the plant's dejected appearance.

D. mortii prefers a more open habitat than *D. tenuissimum* and is not a high altitude dweller, preferring the lower levels and foot-hills east of the Great Dividing Range. It is not classed as a common plant as it is only thinly distributed from far northern N.S.W. to an area about Tully in Queensland.

In cultivation this orchid can be treated in a similar manner to that advocated for *D. teretifolium.*

D. striolatum. This species is classified as a lithophyte as it grows naturally *en masse* on sheer rock faces that have an easterly to southerly aspect thus avoiding, like most lithophytes, the scorching heat of the sun. These rock faces offer very little in the way of nourishment and the plants themselves usually show the result of this Spartan existence by growing thin and spindly with few leaves. Yet not all are so deprived of a good supply of nutriment and moisture, for any plant that has been fortunate enough to develop near to a point of constant dampness, such as a mountain spring whose water spreads to, and moistens, the surface of the rock, is able to grow into a more robust specimen. Where such conditions exist (a damp rock surface protected from the heat of the day), mosses soon grow and in so doing become the collecting point of fine particles of debris which in turn provide an excellent food source for a lithophytic orchid.

So with this in mind the grower should aim at providing a constant supply of moisture combined with ample nourishment. Some people may prefer pot culture while others may settle for slab culture, but perhaps the most appealing is basket culture. For a small plant, that is one with less than twenty leaves, a 75 mm plastic pot or a slab mounting would be best, but for a large plant, or several small ones together, a wire basket heavily lined with paperbark or layers of elkhorn fibre (*Platycerium bifurcatum*), to prevent excessive drying out, is ideal.

The compost for pots should be fine and fibrous so that it is moisture retentive but draining freely. Such compost may be composed of 70% good quality peat moss, 20% gum leaf mould and 10% clean river sand. Note that peat moss should always be in a moist state when being mixed with other ingredients. For slab culture secure tne plant to a 10 mm thick layer of elkhorn fibre that has been backed with a piece of hardwood paling. For basket culture the compost suggested for use in pots is suitable but a better result can be obtained by providing thick vertical layers of wet elkhorn fibre tightly packed together so that excessive air is excluded, thus preventing the plant's roots from drying out before it has a chance to become established. Place the roots of the plant well down in between the layers of fibre, and when the planting is complete the contents of the basket must be thoroughly soaked with water. Hang the moist basket where the air circulation is good and where the plant will receive ample light but no direct sun until it is well established.

Remember, for good results this plant should not be allowed to remain dry at any stage until growing freely and then never for any lengthy period.

With good care this orchid will grow vigorously and hang down in a dense and orderly array of sturdy stems and plump leaves that will produce an abundance of eye-catching flowers.

The extent of its natural habitat is from slightly north of Sydney southward to Tasmania. It favours coastal escarpments but can also be found forther inland up to about 1000 metres altitude.

August, 1982

1 Belmore Road,
Peakhurst, 2210

International Centenary Orchid Conference — March 1985

A conference to mark the centenary of the establishment of International Orchid Conferences will be held in the Society's Halls in Westminster, London from March 21-24, 1985.

The programme will include a series of lectures, an exhibition of orchids from both professional and amateur growers and possible excursions to notable collections.

Further information will be released in due course when the programme has been finally formulated.

Applications for the receipt of details should be addressed to The Conference Secretary, International Centenary Orchid Conference, The Royal Horticultural Society, P.O. Box 313, Vincent Square, London SW1P 2PE (Telephone: 01-834 4333).

New Port Hacking ANOS Group

At a meeting held at Gymea Community Centre on 2nd August, 1982, a Port Hacking Group of the Society was formed.

It was decided to hold meetings at 8 p.m. on the 4th Tuesday of each month at the Community Hall, Gymea Road, Gymea.

The following were elected as office-bearers:

President: PETER LEITHHEAD,
44 Walker Ave., Gymea 2227.
Phone: 524 5884 (Home)
Secretary: BOB NAPIER,
12 Laguna St, Carringbah 2229.
Treasurer: MIKE CHAPPELL
Committee: DON BARNHAM
WAYNE HAMILTON
RAY HAMILTON

The inaugural meeting was attended by Mr Norman Hilliger, President of ANOS. This is the third Group in the Sydney Metropolitan Area.

An ANOS member who holds a Propogator's Licence issued by the N.S.W. National Parks and Wildlife Service had Service tags stolen from the post when he renewed his licence for 1982/83.

The serial numbers of the missing tags are 239001—239500. We understand that there is a "black market" in Service tags so ANOS Council requests that members watch out for any of these tags and advise Council wherever they may be seen.

Who's Who

THE AUSTRALASIAN NATIVE ORCHID SOCIETY OFFICERS AND GROUP CONTACTS:

A.N.O.S. Council:
President: N. Hilliger; Vice-Presidents: F. Martin, M. Korzenowski; Secretary: M. Harrison, Councillors: Mrs M. Spence, D. McAlpine, B. Butler.

A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

NEW SOUTH WALES

- *Sydney Group.* Tel.: (02) 53 5956
  Meets 8 p.m. 2nd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099.
  Meets 8 p.m. 2nd Thursday, the Thomas Vickers Memorial Hall, Cnr. Pitt and Grainger Roads, North Curl Curl.
- *Port Hacking Group:* Secretary: R.G. Napier. Tel.: (02) 524 9996. 12 Laguna Street, Carringbah. 2229.
  Meets 8 p.m. 4th Tuesday at Community Hall, Gymea Bay Road, Gymea.
- *Newcastle Group:* Tel.: 48 9109 — Meets 4th Wednesday, John Young Community Hall Thomas St.; Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- *Hastings Valley Group:* Tel.: (065) 85 6150 — Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Wauchope.
- *Central Coast Group:* Tel.: Secretary (043) 88 1785
  Meets 7.30 p.m. 2nd Wednesday at the Baptist Church Hall, Cnr. York & Frederick Streets, East Gosford.
- *Far North Coast Group:* Secretary: Graham Gamble Tel.: (066) 24 1023
  Meets 8 p.m. 3rd Thursday at Ballina Bowling Club, Cherry Street, Ballina.

VICTORIA

- *Victorian Group:* Tel.: (03) 754 6585
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- *Darling Downs Group:* Secretary: Mr John Leyden, 66 Mort Street, Toowoomba, 4350. Tel.: (076) 34 2813.
  Meets 7.30 p.m. 3rd Friday at the Auditorium of the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- *Native Orchid Society of Queensland (Affiliated):* c/- P.O. Box 159, Broadway, Qld. 4000.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

SOUTH AUSTRALIA

- *Native Orchid Society of South Australia (Affiliated):* Secretary: E.R. Hargreaves. 1 Halmon Avenue, Everard Park, 5053 Tel.: (08) 293 2471 or 297 3724 — Meets 4th Tuesday, St Matthew's Hall, 67 Bridge St, Kensington.

WESTERN AUSTRALIA

- *W.A. Native Orchid Study and Conservation Group (Inc.) (Affiliated):* Tel.: (09) 337 9614
  Meets 3rd Wednesday at the Department of Agriculture's Film Room, Jarrah Road, South Perth.

NORTHERN TERRITORY

- *The Orchid Society of the Northern Territory (Affiliated):* Secretary: Mrs G. Heinemann, Tel.: 85 4624
  P.O. Box 38493, Winnellie, N.T. 5789

AFFILIATED SOCIETIES

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Berowra & District Orchid Society
Blue Mountains & District Orchid Society (Tel.: (047) 21 8126 Mr K. Edwards)
Corrimal Orchid Society
Cumberland Orchid Circle
Eastwood & District Orchid Circle
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Dendrobium andreemillarae T.M. Reeve.
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Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

ANOS POLICY MEETING

A meeting of 19 delegates from 9 ANOS Regional Groups (including Victoria and South Australia) was held in Sydney on 6th November.

It was a big step forward for ANOS. For the first time the widespread Groups were represented at a day-long conference to express their views on what the Society should be doing now and in the future. Under the Chairmanship of Mark Clements, attending as an independent observer, all delegates had the opportunity to put forward the views of their Groups. A number of motions were carried. The most important one, relating to the structure of ANOS was "that this ad hoc Committee recommends to ANOS Council that it commences action to change the ANOS Constitution. . . to establish both a Policy Council and an Executive Committee in place of the existing ANOS Council. The Policy Council will comprise one representative from each ANOS Group or affiliated native orchid society in Australasia and will meet annually to decide and establish policy and plans for the coming year. The Executive Committee will be responsible for implementing the Policy Council's directions. All meetings of both Council and Committee will be open to ANOS member observers." This constitutional change will be submitted to the 1983 Annual General Meeting (August); so members should now begin to give it some careful thought. A formal notice of motion will be published at least 30 days before the AGM and at least three-quarters majority vote will be needed to carry the amendments.

TAXONOMY IN *THE ORCHADIAN*

Of special interest to your editor, at the above Meeting was the general appreciation and approval of *The Orchadian* **in its present form** — including the need to publish taxonomic work. It seemed to me, as each and every delegate had his or her say on the subject, that there was a general recognition that taxonomic articles are not the most popular facet of the journal. Yet serious studies and effective discussion cannot proceed without a system of classification.

Taxonomy is concerned with systems of classification and the formulation of principles, rules and procedures to make those systems work. Obviously we must have taxonomy in *The Orchadian* if we are to study orchids effectively. When botanists are called upon to identify plants they may have to research old records (Type specimens, original descriptions and so on). Very often they are inhibited or confused by poor herbarium specimens, or inadequate descriptions by the original authors. If you examine the work of T.M. Reeve in this issue of *The Orchadian* I think you will agree that botanists in the future will have no such difficulties with his work. Tom Reeve, having suffered the frustration of poor records left by others has been meticulous for the sake of future researchers.

FEEDBACK AND FOLLOW-UP

- Readers should be aware that scientific articles published in *The Orchadian* are read by an honorary botanical referee whose comments, where necessary, are conveyed to the author concerned. The ANOS Group Delegates' Meeting (referred to above) recommended "that the Editor be encouraged to consult more than one referee on each scientific article and that Council should develop a list of authorities." In principle this would be fine. In practice it may lead to delayed or very irregular publication. Distant referees are not at the beck and call of editors working to deadlines.

It is a matter of judgement by the editor whether a paper should be passed to a referee. Our present honorary referee would no doubt suggest other specialised referees if this were necessary in a particular case. In most cases it would not be necessary. The reputation of an author may be the determining factor. It is sometimes argued that because a paper is "scientific" is must be refereed. I would argue that both "scientific" and "non-scientific" articles can be expressions of personal opinions. My own policy is that *The Orchadian* should be a forum for such expressions and its editor should not veto a paper simply because he or a referee disagrees with an opinion. No one has "the last say" in any science.

- The divergence of opinion between "scientific" writers is exemplified in Prof. Holttum's book review of "Parts 11 and 12 of the new Schlechter" (*Orchid Review*, August 1982, pp 249-250) in which he disagrees with Dr F.G. Brieger's treatment of the *Dendrobiinae* (and in which by the way, Brieger proposes a new generic name *Dockrillia* for *Dendrobium linguiforme* and its allies). Holttum says "it is unfortunate that, working mainly in Brazil, he (Brieger) had little opportunity of examining living plants of the *Dendrobium* alliance".
- "What a tangled web we weave!" Please see the "Postscript" to David McAlpine's paper in this issue. The names of *Pterostylis ceriflora* and *P. gibbosa* are up for changes. The reasons are not available without personal discussion with Mark Clements. In the interests of accuracy your editor has had to do some vexatious fussing about — by letter and by telephone — and has had to defer another author's article on this taxonomic subject. The problem is not yet (and may never be) finally solved.
- No wonder taxonomists who change orchid names are unpopular! It is human nature to resist change. My advice would be: If you feel that a change is justified then use logic to prove it — and get all your facts right. Don't make a change for the sake of change. Don't weave a tangled web. Adopt the motto: **If it is not necessary to change, it is necessary not to change.**

- *Corrigendum:* In *The Orchadian*, Sept., 1982 (p. 109) the symbol † was incorrectly applied to *D. striolatum* as a parent in hybrid registration.

21 DEC 1982

THE RUFOUS GREENHOODS — EXPERIENCE WITH THEIR CULTURE

by David K. McAlpine

The "rufous greenhoods" form a natural section of the large genus *Pterostylis*. Just as not all greenhoods have predominantly green flowers, so not all of the rufous group have rufous (red-brown) flowers, but the name derives from that of *Pterostylis rufa* R. Br. which typifies this group. The plants are not as well known as other greenhoods which can be so abundant near our main coastal cities, but are distributed through much of the drier, more open country of inland parts of southern Australian states. There are exceptions, as plants are recorded from wet subtropical coastal areas near Taree, New South Wales, the Gold Coast of Queensland, and from New Zealand.

These greenhoods do not have the vibrant, pretty colours of hybrid cattleyas and dendrobiums, nor does the shape of the narrow, hooded, fly-trap flower conform to judging standards for classical glass-house orchids. For many of us this is a refreshing change and we can value them as examples of the very distinctive flora that has developed under comparative isolation in adaption to a special set of natural environmental conditions. Artificial cultivars do not have these qualities.

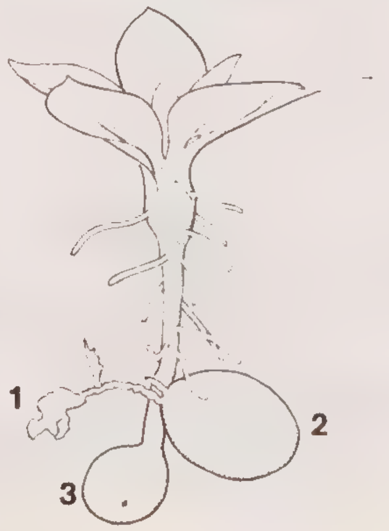
The essential characteristics of the group include a rosette of leaves at ground-level, from the centre of which the inflorescence springs; though the leaves are sometimes withered before the flowers open. There are generally lateral sepals directed downwards, unlike most of the single-flowered greenhoods in which the lateral sepals ascend and embrace the hood or galea. As in most other greenhoods the lip is very sensitive, but in this group it is always directed downwards before being sprung.

The species of the rufous group include: *Pterostylis mutica, cycnocephala, rufa, pusilla, boormanii, hamata, mitchellii, gobbosa, ceriflora, biseta* and *woollsii*. There are also several still unnamed species. A useful taxonomic revision of the group has been given by Blackmore and Clemesha (1968), but it is evident that further revision is required to define some species accurately and to produce a stable nomenclature.

I have found rufous greenhoods fairly easy subjects for pot culture and still have my first plants, obtained 5 and 4 years ago. These and others flower each spring, the normal flowering time for all species I have encountered. Removal from their normal climatic zone, however, can sometimes change this. Plants which normally flower in October near Queanbeyan, New South Wales, when moved to Sydney's warmer climate commenced flowering as early as July in 1981 and May in 1982.

Plants in my collection are potted in their natural soil or a bush loam. If the natural soil is a heavy clay this is broken down with a little sand and organic compost such as commercial cymbidium compost. The bottom of the pot has some material to give drainage with minimum loss of soil. Forest floor litter including fine twigs and broken leaves is suitable, as is crushed charcoal or bark covered with a layer of grass cuttings.

Figure 1.
A plant of *Pterostylis boormanii* sketched in July 1982, showing the root-stem tuberoids (not strictly tubers) produced in three successive years: 1, tuberoid produced in 1980; 2, tuberoid produced in 1981; 3, tuberoid developing in 1982.



Spring is probably not the best time to repot plants as they are approaching their summer dormancy, but most plants are discovered in this season while in flower. They should then be transferred with as little disturbance as possible to the underground parts. After flowering the whole visible part of the plant withers away and only the round potato-like tuberoid survives the summer. Rufous greenhoods in general are adapted to withstand hot dry summers and during dormancy are best stored in a cool dry place, such as under the house, or in a cupboard if

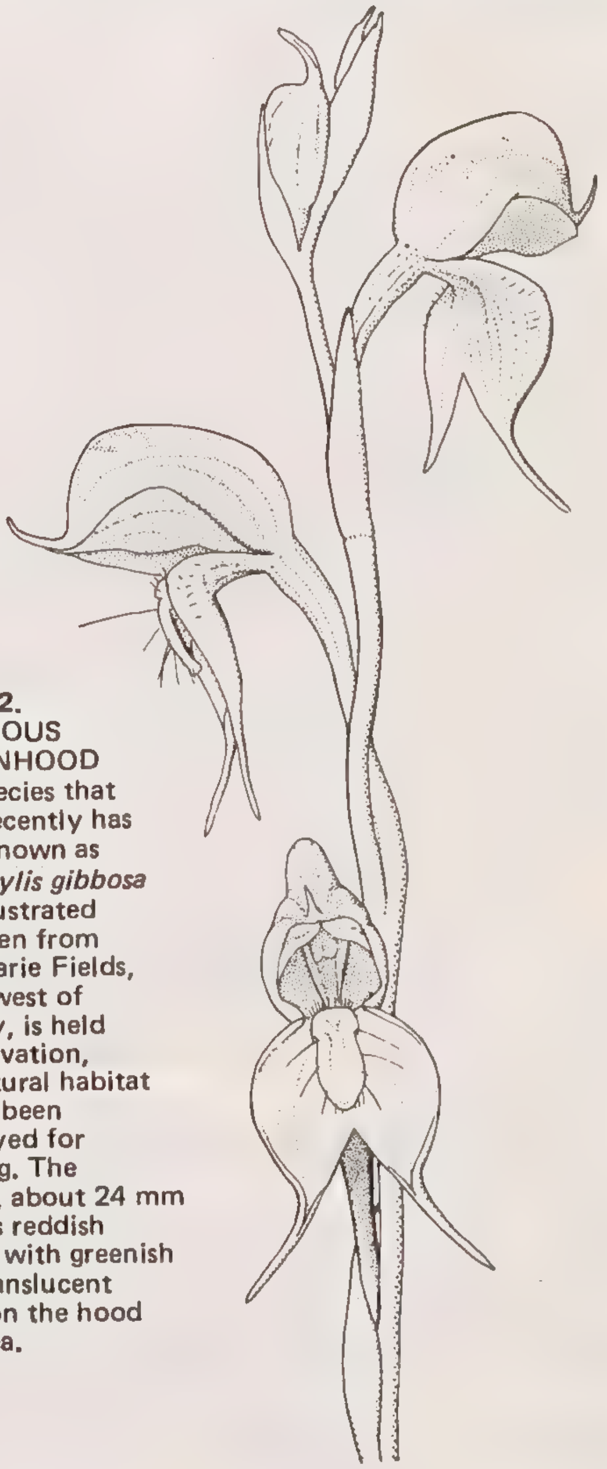


Figure 2.
A RUFOUS GREENHOOD of a species that until recently has been known as *Pterostylis gibbosa* The illustrated specimen from Macquarie Fields, south-west of Sydney, is held in cultivation, the natural habitat having been destroyed for housing. The flower, about 24 mm high, is reddish brown with greenish and translucent areas on the hood or galea.

there are only a few. They are not removed from the pots. During this period I water about every six weeks, using a little Captan fungicide in the water, but I doubt if even this watering is necessary for plants from drier parts. I water when the humidity is relatively low.

Plants usually commence growth in March or April and more frequent watering (about every two weeks) may now help stimulate growth. When the young leaves break the surface they are subject to burning if exposed to the full late-summer sunlight, but nevertheless thrive in fairly strong light particularly as the days shorten. During the winter the plants are given optimum growing conditions as new tuberoids are developing below the surface and storing materials, not only for spring flowering but for survival during the next summer. Watering once a week seems sufficient, but I miss watering if the humidity is high, as it often is in Sydney.

Because of frequent troubles with fungus, I have found it desirable to give the plants shelter from rain, but this may be less important in dry climates. My few losses have occurred from fungus attack following heavy rain, and smaller plants are particularly vulnerable. An open-sided glass lean-to or sun porch seems ideal, but an enclosed glasshouse is too warm (at least in Sydney) and may produce abnormal flowering or no flowering. Snails and particularly slugs sometimes eat the young leaves and inflorescences. These I have largely controlled with Baysol pellets on the soil in the pots. A more general distribution of this product on ones property could have undesirable consequences. In the long term it is likely to produce strains of these molluscs and slaters resistant to the pesticide. It is also a hazard to domestic animals, and can cause a shortage of a valuable natural fertilizer. Crushed snails and slugs have proved an excellent fertilizer for terrestrial orchids: hence the broken shells often seen on my orchid pot. One March a slug consumed the new shoot of a plant of *Pterostylis boormanii* as it broke the surface, eating it back to well below the soil surface. I dried the pot off somewhat, fearing the remainder of the plant might rot, but no shoot appeared all that growing season. At the end of spring I investigated below the surface and found there was still a large, sound tuberoid. This was carefully replaced in the pot and treated like my other plants. Sure enough a fine rosette of leaves appeared next autumn and the plant has flowered annually since. This is an interesting illustration of how a plant can survive for about eighteen months without any green photosynthetic parts, and induces one to believe reports that similar plants in the bush can simply skip a season's growth under extreme drought.

This plant of *P. boormanii* has been in my collection since 1977 and has, like most of my rufous greenhood plnts, never multiplied, but I find just occasionally that rufous greenhoods of several species have multiplied vegetatively. This appears to be the reaction of exceptional clones to favourable growing conditions. Because of the difficulty of raising seed, I have tried some experiments in dividing plants.

In late winter the plant normally has two tuberoids, the old one formed in the previous season and the nearly fully developed tuberoid on a side rhizome. The leafy rosette is joined by an almost vertical underground stem to the old tuberoid. Carefully cutting off both tuberoids at this stage leaves one with a rosette attached to a piece of vertical stem. After placing dry Captan powder on all cut surfaces, I replanted these parts and watered sparingly with weak Captan solution. In a majority of cases all three parts have formed plants the following season, and in some cases the rosette section has promptly produced an inflorescence. Some isolated rosettes formed two or three plants the following season. A more cautious method of division for a rare plant would be simply to sever the new tuber from the rest of the plant. In this way it should be possible to double the stock about every two or three years.

Several of the rufous greenhood species are rare and localised and they are now protected by law in most Australian states. Fortunately they have not yet become items of commerce like many epiphytic orchids and carnivorous plants, and it is hoped that increased interest in them will aid to preserve them in their native habitats. As they often grow in unattractive scrubby habitats of some value for grazing development, they are seldom found in our nature reserves. Plants can be obtained at times from private land with the permission of the owners. Large quantities should only be taken when the land is due for "development", most forms of which result in complete destruction of habitat. It is hoped that artificial propogation, including the still difficult raising from seed, will be able to satisfy the modest demands of orchid-lovers for these little plants.

With the progressive loss of natural habitats and the extinction of some orchids in certain districts, properly documented live collections can take on real scientific importance. There are species of *Cattleya* and *Paphiopedilum* which are probably extinct, except in cultivation, and it is possible that this will be the case for some Australasian species in the next few decades. It is very desirable that important plants (why not all plants?) be accurately labelled with the locality and date of original collection, just as is done with a botanical herbarium. It is best to label the plant promptly on collection. Relying on memory later will produce a percentage of errors which greatly reduces the scientific value of the collection. Unfortunately most of our botanic gardens have not in the past been conscientious in preserving our rarer native orchids (or other plants) in their live collections. The comparatively young National Botanic Gardens in Canberra is now maintaining a very fine collection of Australasian native orchids and several *Pterostylis* species are being raised from seed. Lodging unusual plants in this collection is a way orchid collectors can make a positive contribution to the future of Orchidology.

The Australian Museum
College Street,
Sydney N.S.W. 2000

August, 1982

A POSTSCRIPT ON *PTEROSTYLIS CERIFLORA*
Blackmore et Clemesha

Pterostylis ceriflora is the name used for an endangered species of rufous greenhood in my recent *Orchadian* article (Vol. 7, No. 4:76 June, 1982). In his recently published *Preliminary Checklist of Australian Orchidaceae,* Mark A. Clements has reduced the name *P. ceriflora* Blackmore et Clemesha (1968) to synonymy under *P. gibbosa* R. Brown (1810). From discussions with Mr Clements it appears that this does not mean that the two species known under the names *P. gibbosa* and *P. ceriflora* since the revision of the "Rufous Group" by Blackmore and Clemesha are to be merged, but that the name *P. gibbosa* has been misapplied in the past and, being published earlier than *P. ceriflora,* must replace that name. Needless to say, the establishment of the correct name for the species hitherto known as *P. gibbosa* and currently nameless, is a matter for careful scientific consideration. This species is itself uncommon and local and has lost much of its habitat near Sydney in recent years.

REFERENCE.

Blackmore, J.A.P. and Clemesha, S.C., 1968. "A Review of the So-called 'Rufous Group' of the Genus *Pterostylis.*" Orchadian 2: 148-166.

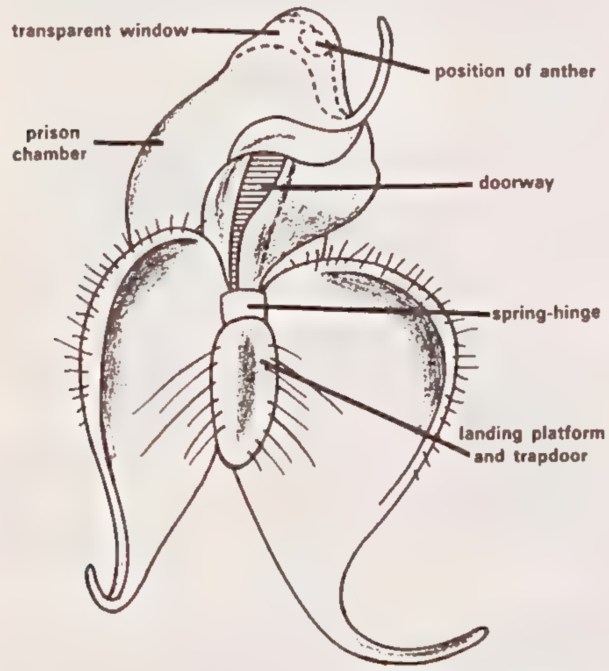
D.K. McAlpine,
November2, 1982

RUFOUS GREENHOODS AS FLY-TRAPS

by David McAlpine

(Extract from an article in "Australian Natural History" by permission of the author)

In a number of Australian orchids we find moving parts contributing to the floral mechanism. The lip (or labellum, the modified median petal) is often attached by a loose, springy basal hinge. When a bee or wasp alights on the lip of a spider orchid, the lip first sinks under its weight, thus opening up the flower. As the insect proceeds inside it changes the position of its weight on the lip, which then flops over, pushing the insect against the column which bears the reproductive organs. This process, repeated by the same insect on several flowers, gives a fair chance of cross pollination. Rica Erickson, in her fascinating book *Orchids of the West* (Western Australia), likens these flowers to see-saws.



Flower of Boorman's greenhood, *Pterostylis boormanii*, an animated fly-trap. Drawing by David McAlpine.

In some orchids the lip quivers in the wind, the long fringes on its margins acting as sails. It is not clear what function this movement serves in pollination, but it occurs in such widely different plants as the greencomb spider orchid, *Caladenia dilatata*, and the fringed leek orchid, *Prasophyllum fimbriatum*, the former pollinated by a male tiphid wasp, the latter by a minute chloropid fly.

Southern Australia is lucky in having a number of orchids in which the 'irritable' lip moves spontaneously from its own energy source on receiving a suitable stimulus, such as that from an insect. These kinds include the duck orchids (*Caleana*, including *Paracaleana*), one of the bird orchids, *Chiloglottis gunnii*, and nearly all the large group of greenhoods (*Pterostylis*). In orchids of other parts of the world this kind of movement is very rare. I shall here consider the greenhoods further as they include some of the most extraordinary of all flowers.

Flowers of many of the best known greenhoods assume the appearance of the leaves of carnivorous pitcher plants (*Cephalotus, Sarracenia, Nepenthes*) and like the latter are adapted to catch flies. There are two points of difference, however. The greenhood does not use the trapped insects for food, but only for pollen transfer. And, secondly, a masterly stroke of one-upmanship, it flips the fly into the pitcher with its irritable lip, if it should land upon it.

The most remarkable fly-traps are provided by flowers of several species grouped under the name 'rufous greenhoods'. Of these Boorman's greenhood, *Pterostylis boormanii*, is, literally, a striking example. This flower is not of the pitcher type, but the upper part of the flower or galea, formed by the top sepal combined with the two side petals, forms a chamber with a narrow downward-facing opening. This chamber encloses the slender column, bearing the anther and stigma. When undisturbed the lip is directed downwards from below the opening. Flies are attracted to the lip (probably male fungus midges as in the related *Pterostylis gibbosa*, and probably by scent). On landing the insect is snapped upwards by movement of the sensitive lip through the opening into a prison-like chamber, the exit now being blocked by the spring-loaded lip. The fly naturally behaves like any fly trying to escape from an enclosed space. It tries to move upwards and towards the light. Firstly, rising against the sticky stigma on the lower surface of the column, any pollen previously attached to its back is likely to remain behind pollinating the flower. Above, light is visible through a transparent window in the galea, but to reach this the insect travels through a tube formed by the side wings of the column. This leads it past the anther. If this is brushed by the back of the insect a sticky disc adheres to it and this has the two pollen masses attached. Thus the insect becomes the involuntary bearer of the whole pollen complex. The insect may at this stage squeeze past the lip and gain its freedom, or it may wait until the lip is lowered (usually in 15 to 20 minutes) when it can simply fall through the opening to repeat the process at another flower. (Insects are not very bright.)

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the R.H.S. listed in the Orchid Review *February and September, 1982)*

NAME	PARENTAGE	REGISTERED BY
SARCONOPSIS		
Lavinia	*Sarc. hartmannii* *x Phal. amabilis*	R. Bedford
SARCOCHILUS		
Devils Tower	Shooting Star *x hartmannii*	D. Banks

THE IRA BUTLER MEMORIAL TROPHIES FOR 1981

On 8 November, 1982, the Editor received advice that the Trophy Committee had announced its Awards for the 1981 Competition. Trophies have been presented for outstanding exhibits of Australian Native Orchid Hybrids as follows:

- Ira Butler Show Trophies for 1981 were awarded to champion hybrids exhibited at shows held by the State orchid societies and by ANOS Groups.

Society or Group	**Champion Hybrid**	**Owner**
O.S. N.S.W.	*D. x delicatum*	E. Webeck
ANOS Sydney & Warringah Groups	*D. x delicatum*	C. Arnott
Orchid Club of S.A.	D. Bardo Rose	E. Herraman
ANOS Central Coast Group	D. Gloucester Sands	L. Jarvis
Tasmanian O.S.	D. Bardo Rose	M. Mitchell
Victorian Orchid Club.	D. Andrew Persson	L. & M. Vines

- **Champion Hybrid of the Year 1981.** From these show trophy winners, the judges selected Mr Laurie Jarvis's Dendrobium Gloucester Sands — a veritable Champion of Champions.

Some New Species of *Dendrobium* section *Pedilonum* from the Highlands of Papua New Guinea

by T.M. Reeve

Summary: Six new species and one natural hybrid of *Dendrobium* section *Pedilonum* are described and illustrated. All are from the highlands of Papua New Guinea. They are *D. andreemillarae* T.M. Reeve, *D. aurantiroseum* van Royen ex T.M. Reeve, *D. fractum* T.M.Reeve, *D. leucocyanum* T.M. Reeve, *D. nothofagicola* T.M. Reeve, *D. womersleyi* T.M. Reeve and *Dendrobium x yengiliense* T.M. Reeve.

Introduction:

***Dendrobium* section *Pedilonum* is a widespread group of orchids extending from India (with probably only one or two species) and the Asian mainland, through Malaysia, Indonesia and New Guinea, to the Pacific Islands and east as far as Tahiti in the Society Islands group. Only one species is found on the Australian mainland — *Dendrobium smillieae* F. Muell., the "bottle-brush orchid" of North Queensland. The section *Pedilonum* is rather ill-defined and is viewed more broadly by some authorities such as Holttum who includes Schlechter's section *Platycaulon* with *Pedilonum* in his treatment of the Malayan flora. Others would regard Schlechter's sections *Calyptrochilus, Cuthbertsonia* and *Oxyglossum* as all being within *Pedilonum* and probably there is justification for placing these groups better as subsections.**

Section *Pedilonum* as delineated by Schlechter contains about 25 to 30 species in New Guinea with possibly another 5 or 6 endemic to the Pacific Islands region. Revisionary work has commenced on the New Guinea and Pacific Island species first. Ideally the whole section should be reviewed together but without extensive new collections this will be a difficult task as the Type material for the western species is often poor and also the early descriptions are usually very inadequate.

This paper is a precursory one describing six new species and one natural hybrid from the mountains of New Guinea. Several of these species are relatively uncommon or are rarely collected in flower, so they have remained unknown to science in the past. Additional notes on distribution, flowering and cultivation are also included.

1. *Dendrobium andreemillarae* T.M. Reeve

Dendrobium andreemillarae T.M. Reeve *sp. nov. D. laevifolio* Stapf simile sed, propter caules longiores graciles cylindraceosque, aliquot foliis dispositis, floribus maioribus et mento latiore attenuato tantum breviter a latere viso ad apicem, differt.

Description: An epiphytic *herb* up to 15 cm high. *Roots* very thick, white, glabrous, up to 4.5 mm diameter. *Rhizomes* very short. *Stems* slender, cylindrical, green to greenish-yellow, 3-13 x 0.15-0.3 cm, with nodes blackish, 0.3-1.8 cm apart. *Leaves* narrowly elliptic, acute, fleshy, medium green, 2-6 x 0.9-1.8 cm. *Inflorescences* arising from both leafy and leafless stems, few (1-4) flowered, peduncle and rhachis short; *bracts* orbicular, apiculate, concave, 5-7 x 5-7 mm. *Flowers* large, waxy and fleshy, glabrous, widely opening, 26-30 mm long, purple to purplish pink with labellum orange-red and margins of the labellum and dorsal part of the mentum white. *Dorsal sepal* oblong — ovate, subacute, 13-15 x 6-7 mm; *lateral sepals* 21-24 x 8 mm, fused at front of mentum for c. 3 mm; *mentum apex* obtuse to slightly bilobed, in sideview the mentum is shortly tapered near the apex. *Petals* obovate, obtuse, 14-17 x 7-8 mm. *Labellum* boat-shaped (with flat bottom), slightly incurved, elongated with apex extending 7-8 mm above top of the column (and also longer than the lateral sepals) with prominent U-shaped transverse ridge c. 6mm from the base, 25-28 x 4-5 mm (expanded width 13-15 mm). *Column* typical of the section, c. 4.5 x 4 mm; *column foot* 11-12 mm long; *anther* cucullate, emarginate, c. 3 x 3 mm; *pollinia* colour not recorded. *Ovary* 6-grooved, ovary with pedicel 17-23 mm long.

Holotype: Papua New Guinea: Morobe Province, Wau District, Mt Kaindi summit, 2360 m, August 1968, *A.N. Millar* NGF 37783 in LAE.

Distribution: This species has been recorded only twice and both times from the same locality — Mt Kaindi summit near Wau in the Morobe Province. Details of the second collection are as follows: *Howcroft* LAE 64082, July 1978 (LAE).

Notes: *D. andreemillarae* is an uncommon species which grows as an epiphyte in the *Nothofagus* forest on Mt Kaindi. Together with a sharp-eyed assistant, John Tari, I spent 3 days searching the top of Mt Kaindi for this species in May 1981, but without success. However we did find 2 plants of the similarly coloured *Dendrobium nubigena* Schltr (section *Calyptrochilus*), a species which apparently has not been recorded since Schlechter's original discovery in 1908. Mount Kaindi is very rich in orchids and probably another visit in July or August might prove successful in locating more plants of this new species.*

The flowers of *D. andreemillarae* are quite similar in shape and colour to those of *D. laevifolium* Stapf which grows in the islands of the Milne Bay Province. However the flowers of the new species are larger and, if compared in sideview, the mentum shapes are distinctive. Whereas the mentum of *D. laevifolium* is tapered all the way down to the apex, the mentum of *D. andreemillarae* is more or less uniformly broad for most of its length and then shortly tapered near the apex. Despite the similarity of the flowers, the vegetative parts of these two species are quite different.

In December 1978 Neville Howcroft passed on to me the plant which he had collected and illustrated in July of that year. However it was set back by the stay at a considerably lower altitude for 5 months and has never recovered. It appears to be a difficult subject to grow.

This species is named in honour of its discoverer, Mrs Andree Millar. Her many collections preserved in herbaria will undoubtedly be her most valuable and enduring contribution to New Guinea orchidology.

2. *Dendrobium aurantiroseum* P. van Royen ex T.M. Reeve

Dendrobium aurantiroseum P. van Royen ex T.M. Reeve *sp. nov. D. purpureo* Roxb. montano simile aliquantum sed, rhizomatibus distinctis, pseudobulbis 1-2- foliatis, floribus maioribus multo et carnosis, apicibus obtusis

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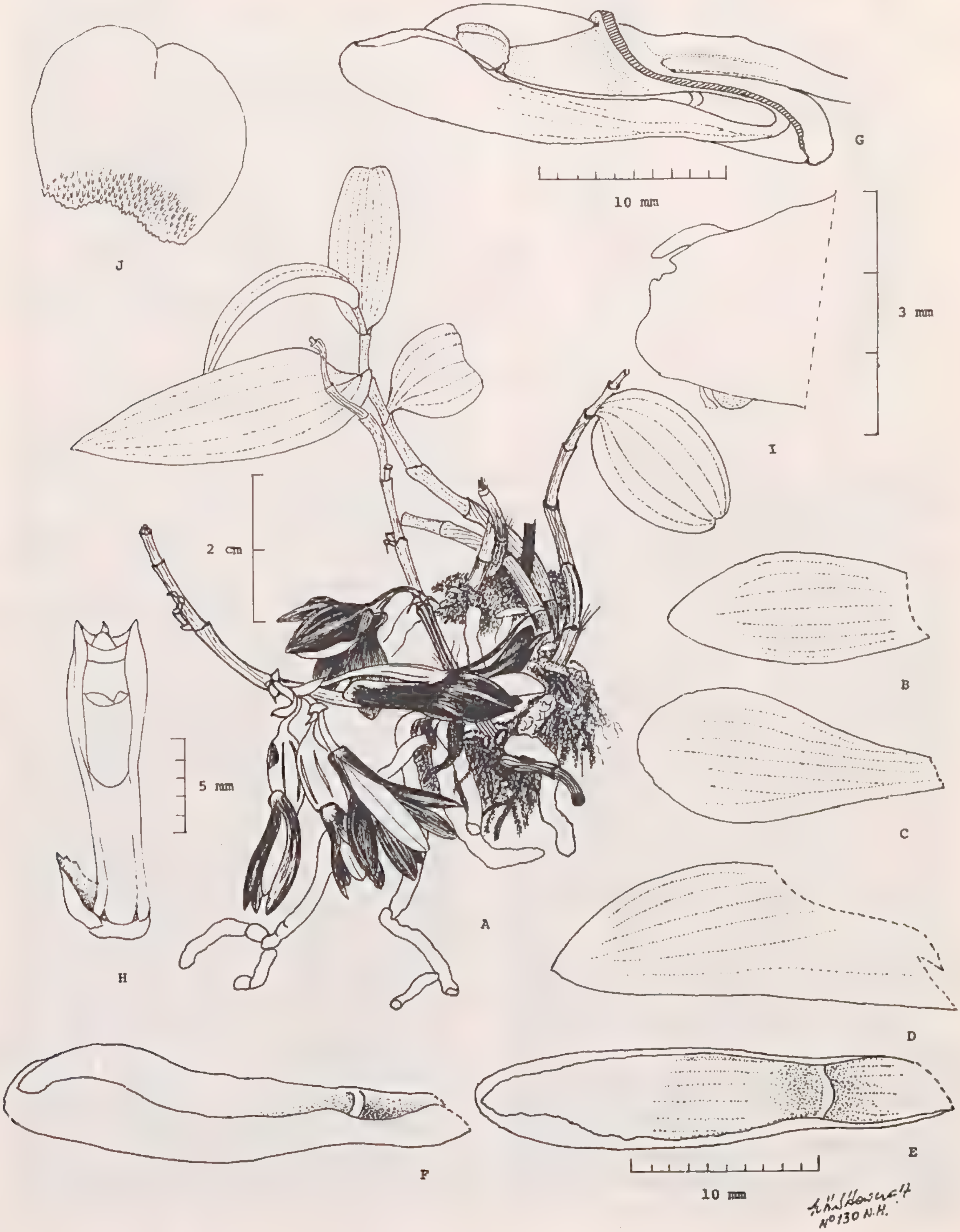
* **FOOTNOTE:**
In July 1982 *D. andreemillarae* was collected on Mt Kumbivera near Porgera in the Enga Province of P.N.G. The plants were growing in large clumps of moss on *Nothofagus* trees at 3000 m. This uncommon species was discovered whilst trees were being felled to make way for the new Porgera-Paiela road. Two plants were in flower and have been pressed/pickled for deposition with Lae, Kew and Sydney herbaria (*Reeve* 705). Some further details of this species are as follows: *Plants* up to 20 cm tall, branching and rooting freely from the nodes of the older stems. *Root* tips orange. *Leaves* variable in shape from narrowly elliptic to broadly ovate, 20-51 x 8-25 mm. *Flowers* 28-31 mm long, bright purple with mentum apex and dorsal section of the mentum (adjacent to ovary) white; labellum orange with apex tinged purplish; pollinia grey, slightly yellowish. T.M.R. Laiagam
23.vii.1982

Figure 1. *Dendrobium andreemillarae.* Drawn from *LAE* 64082 by N.H.S. Howcroft (No. 130 N.H.) and reproduced by his kind permission.

A. Plant habit and flowers; B. Dorsal sepal; C. Petal; D. Lateral sepal; E. Labellum (inside); F. Labellum (sideview); G. Ovary, column and labellum; H. Column; I. Column apex (sideview) showing germinating pollen body at base; J. Anther.



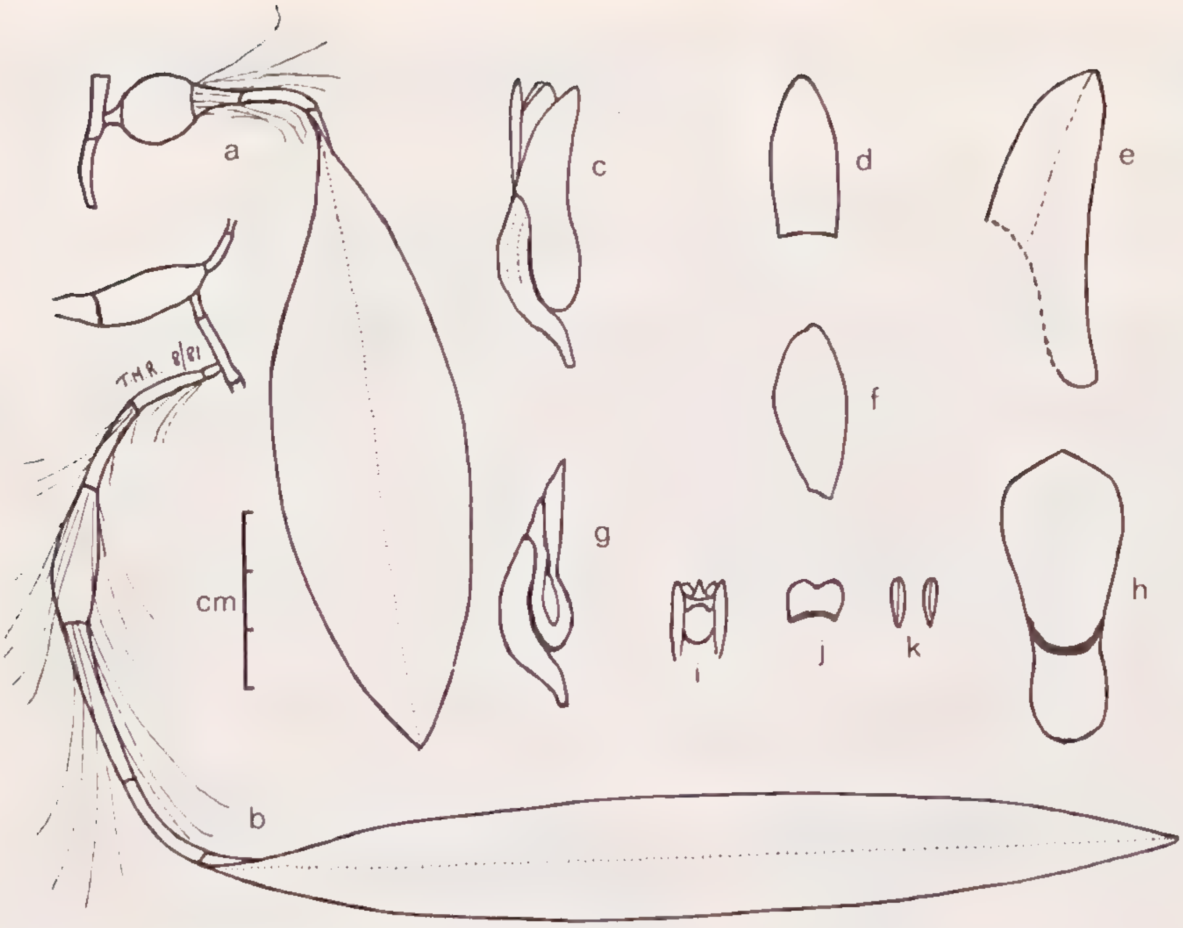


Figure 2. *Dendrobium aurantiroseum.* Drawn from living material at Laiagam (*Reeve* 93) by T.M. Reeve.
a, b. Portions of 2 plants showing the variation in pseudobulbs and leaf shapes.
c. Flower
d. Dorsal sepal
e. Lateral sepal
f. Petal
g. Pedicel/ovary/column/labellum
h. Labellum
i. Column
j. Anther
k. Pollinia
a, b to indicated scale; c,g to scale x 2; c-f, h, i to scale x 3; j, k to scale x 6.

tepalorum et colore florum roseorum alborumque labello fasciato manifeste aurantiaco-roseo, differt.

Description: A creeping epiphytic *herb,* often embedded in loose moss and very straggly (more compact if exposed to direct sunlight). *Roots* smooth, slender, 1-1.5 mm diameter. *Rhizomes* distinct, usually short, c. 2 mm diameter. *Pseudobulbs* ovoid to fusiform, with 3-6 nodes, green to brown, becoming rugose with age, 0.5-12 x 0.2-1.6 cm, with 1 or 2 leaves at the apex of new stems. *Leaves* subpetiolate, elliptic-lanceolate (sometimes linear-lanceolate), acute, glabrous, green sometimes suffused with purple underneath, 2-28 x 0.9-3.8 cm. *Inflorescences* arising from any of the nodes on defoliated stems, many-flowered in dense to subdense racemes; *peduncle* 2-20 mm long; *rhachis* 4-15 mm long; *bracts* ovate, acuminate, 5-10 x 2.5-5 mm. *Flowers* medium to large, fleshy, glabrous, not widely opening, 18-28 mm long, pink to mauve with white apices and prominent orange to orange-red band on the upper part of the labellum (apex white). *Dorsal sepal* oblong-ovate, obtuse to subacute, 9-15 x 3.5-5 mm; *lateral sepals* obtuse, 18-26 x 5-8 mm. *Petals* obovate - spathulate, obtuse, 9-15 x 4-5 mm. *Labellum* simple, obovate - spathulate, subacute with side margins incurved, constricted below centre with distinct U-shaped cross-ridge, basal section saccate, 17-22 x 6-8 mm (expanded). *Column* typical of section, 3.5-4 x 3-3.5 mm; *column foot* 9-13 mm long; *anther* greyish-maroon, c. 1.5-2 x 1.5 mm; *pollinia* greyish-maroon, c. 1.5 mm long. *Ovary/pedicel* curved, glabrous, 17-22 mm long.

Holotype: Papua New Guinea: Chimbu Province, Mt Wilhelm, between Keglsugl and Komanimambuno, 2700 m, June 1965, *vanBalgooy* 887 in LAE.

Isotypes: CANB, K. L.

Distribution: As shown by the list of collections below, *D. aurantiroseum* has a widespread distribution throughout the mountains of mainland Papua New Guinea and it is quite common in many localities. It has been collected only twice in Irian Jaya but I do not doubt that it is widespread there also. This species grows between 2100 and 3350 m and is usually found as an epiphyte, embedded in moss, in quite shady habitats.

List of Collections:

Irian Jaya (West New Guinea).
Lake Habbema, 2800 m, Oct. 1938, Brass 10636 (L); Star Mountains, Mt Antares, 2400-2900 m, March 1959, *Nicholas* 15 (L).

Papua New Guinea.

Enga Province: Lagaip District, Wanepos via Laiagam, Feb. 1978, *Reeve* 93 (CBG, E, K, L, LAE, SEL); Porgera District, Paiela, 2100 m, Nov. 1981, *Rees & Reeve* 354 (K, LAE).

Southern Highlands Province: Tari District, Tari Gap, Lei Camp, Mt Ambua, 2650 m, July 1966, *Frodin* NGF 28117 (K, L, LAE); Tari Gap, Ibiwari, 2700 m, Aug. 1966, *Kalkman* 5205 (L); Mendi District, Kargoba road, 2750 m, Sept. 1968, *Coode & Katik* NGF 40014 (K, LAE); *Vandenberg, Katik & Kairo* NGF 40075 (LAE).

Western Highlands Province: Wahgi — Sepik Divide, 2400 m, June 1955, *Womersley & Millar* NGF 7709 (LAE); Minj-Nona Divide, Kubor Range south of Minj, 2900 m, Aug. 1963, *Pullen* Nos 5218, 5280 (AMES, CANB, K, L, LAE); S.W. of Mt Hagen, Tomba track, 2900 m, June 1966, *Wheeler* ANU 6120 (CANB, LAE); Wabag road (Tomba), 2400 m, Sept. 1968, *Vandenberg, Katik & Kairo* NGF 39867 (K, L, LAE).

Chimbu Province: Upper Chimbu District, Mt Wilhelm, 2770 m, July 1959, *Brass* Nos 30429, 30809 (L, LAE); Pengagl Creek, 2750 m, Aug. 1964, *Millar & Sayers* NGF 23763 (LAE); Pindaunde Valley, 3350 m, (terrestrial), May 1966, *McVean & Wade* ANU 7187 (LAE); Keglsugl, 2750 m, May 1967, *Kairo & Streimann* NGF 35776 (LAE); 2600 m, June 1967, *Wade* ANU 7783 (LAE); Kombuglomambuno, 3200 m, June 1968, *Vandenberg* NGF 39674 (LAE); 3300 m, Aug. 1979, *Briggs* 3718 (NSW).

Eastern Highlands Province: Fatima Creek via Goroka, 2300 m, May 1965, *Millar* NGF Nos 22559, 22568 (L, LAE); Kainantu District, Mt Piora, 2800 m, Aug. 1975, *Sands, Pattison & Wood* Nos 1512, 1519 (K).

Madang Province: Saidor District, Teptep (Finisterre Mtns), 2400 m, June 1980, *Reeve* 575 (K, LAE).

Central Province: Mt Albert Edward, Sitibamu track, Aug. 1971, *Millar* UPNG 1213 (LAE, UPNG); Mt Victoria, S.E. slopes, Isuani grassland, 2700 m, July 1974, *Croft et al* NGF 61675 (K, L, LAE), Isuan Swamp, 2365 m, May 1976, van *Royen* 11027 (LAE).

Northern Province: Kokoda District, Mt Kenive, 2500-2700 m, July 1964, *Croft et al* NGF Nos 65024, 65076 (K, LAE).

Notes: Dr P. van Royen labelled several specimens in herbaria but did not publish a description in his *Alpine Flora of New Guinea.* His manuscript name has been retained as it describes quite well the main colours of the flowers. This species (*nomen nudum*) is mentioned on page 62 of R. Northen's recent book (1980) on Miniature Orchids. *D. aurantiroseum* has been cultivated for several years at Laiagam and does reasonably well on tree-fern fibre or on posts under 50% shade. This species is somewhat shy in flowering and has no definite season. The flowers last two or three months.

3. *Dendrobium fractum* T.M. Reeve

Dendrobium fractum T.M. Reeve *sp. nov.* caulibus pendulis et foliis patentibus aliquis speciebus generis *Agrostophylli* simile (exempli gratia *A. patentissimum* J.J. Smith); hoc habitu ab speciebus Nova Guineensibus ceteris omnibus sectionis *Pediloni Dendrobii* facile distinguitur; floribus his *D. aurantirosei* van Royen ex T.M. Reeve similibus sed differt ab hac specie caulibus longis multifoliatis labello obtusiore et reflexo leviter ad apicem et colore florum.

Description: Robust pendulous epiphytic *herb* up to 2.5 metres long. *Roots* thick, smooth, glabrous, up to 5 mm diameter, tips greenish to pale orange. *Rhizomes* extremely short. *Pseudobulbs* cylindrical, slightly flexuous, somewhat constricted at the nodes, 10-250 x 0.8-2.8 cm, with nodes 0.4-2.7 cm apart, new stems leafy throughout, defoliated stems covered with scarious leaf sheaths and the oldest stems with no sheaths, yellowish-green to yellow with black markings at the nodes. *Leaves* amplexicaul, patent, ovate-elliptic to elliptic, obtuse sometimes unequally bilobed at the apex, upper margins crenulate, 2-10 x 1.2-4.5 cm. *Inflorescences* arising from the nodes of defoliated stems, many-flowered in dense racemes; *peduncle* c. 10 x 7 mm; *rhachis* c. 18 x 6 mm; *bracts* papery, spathulate to diamond shaped, acute, 8-18 x 5-9 mm. *Flowers* medium-sized for the section, fleshy, glabrous, not widely opening, c. 20 mm long, purplish-pink (intensity varies and often the inner-flowers are paler especially the mentum), labellum white with upper part golden-yellow and the apex sometimes coloured lilac. *Dorsal sepal* oblong-ovate, subacute, 9-10 x 5 mm; *lateral sepals* 15-18 x 6-7 mm. *Petals* ovate-elliptic, subacute, c. 9 x 4.5 mm. *Labellum* simple, oblong-spathulate, apex obtuse and slightly reflexed, basal section saccate and separated by U-shaped transverse ridge, 16-18 x 6 mm (expanded). *Column* typical of the section, white, c. 4 x 4 mm; *column foot* white with upper part golden-yellow, 9-12 mm long; *anther* purple c. 2 x 2.5 mm; *pollinia* purplish-grey, 2 mm long. *Ovary/pedicel* slightly curved, 19-24 mm long.

Holotype: Papua New Guinea: Enga Province, Kandep District, Mt Ambu, Murip, 2700 m, November 1979, *Reeve* 345 in LAE.

Isotype: K.

Distribution: *D. fractum* has been collected in all the five highland Provinces of Papua New Guinea and grows between 2100 and 2900 m. It is a common epiphyte on the southern slopes of Mt Giluwe around 2600 m and grows there on *Nothofagus perryi.* The list of collections in herbaria (other than the Type) are as follows:

Eastern Highlands Province: Marafunga, 2100 m, July 1965, *Millar* NGF 22601 (LAE).

Chimbu Province: Keglsugl, Mt Wilhelm, 2750 m, May 1967, *Kairo & Streimann* NGF 35768 (BFC, K, LAE).

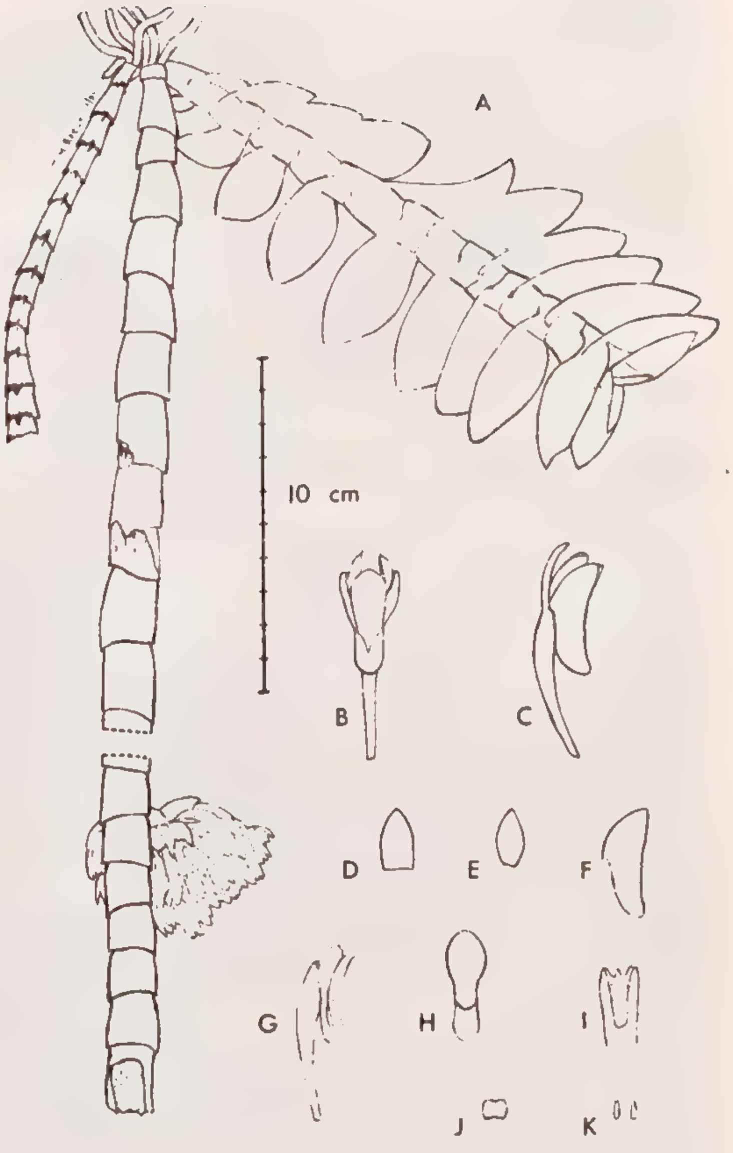


Figure 3. *Dendrobium fractum.* Drawn from the Type (*Reeve* 345) by T.M. Reeve.

A. Plant
B. Flower (front view)
C. Flower (side view)
D. Dorsal sepal
E. Petal
F. Lateral sepal
G. Pedicel/ovary/column/labellum
H. Labellum
I. Column
J. Anther
K. Pollinia

A to indicated scale; B-H to scale x 2; I-K to scale x 3.

Note: Both of the above NGF collections were of plants in fruit. flowering would have occurred at the beginning of the year.

Enga Province: Lagaip District, Yapai via Laiagam, 2600 m, Nov. 1978, *Reeve* 234 (E, LAE).

Notes: This unusual species is rarely seen in flower and it has often been mis-identified as a species of *Agrostophyllum* which it resembles. The pendulous stems sway around in the breeze and plants are mostly collected in a damaged state, especially on fallen trees. In favourable habitats plants may grow to a very large size.

Although several plants of *D. fractum* have been cultivated at Laiagam over the past 5 years, only once have some of them come into flower. (**Late note.** April 1982, one plant is in bud again.) This was from November 1978 to January 1979 and maybe this was initiated by the marked dry season from June to August 1978. It appears that these months (November to January) are the main period for flowering. Being a large pendulous plant it is somewhat difficult to grow it but it does quite well at Laiagam in a hanging basket display or mounted on large pieces of tree-fern. The plants themselves are quite ornamental even if they seldom flower. *D. fractum* likes plenty of shade for good growth and prefers to have its roots covered.

4. *Dendrobium leucocyanum* T.M. Reeve

Dendrobium leucocyanum T.M. Reeve *sp. nov.* inflorescentiis impletis confertim florum parvorum *D. purpureo* Roxb. simile sed differt pseudobulbis parvis rugosis bifoliatis, apicibus obtusioribus tepalorum, crista transversa labelli posita altiore et colore leucocyaneo florum.

Description: A creeping, mat-forming, epiphytic *herb*, up to 5 cm high. *Roots* smooth, slender, 0.3-1 mm diameter. *Rhizomes* distinct, prostrate, usually short, 2-3 mm diameter. *Pseudobulbs* globose to clavate, rugose, brown to reddish-brown (new stems green covered with scarious white bracts), 5-20 x 5-15 mm, each new stem bearing 2 (rarely 3) leaves at the apex. *Leaves* ovate-elliptic to elliptic, subacute to acute often mucronate, pale to medium green with underside (rarely topside) suffused with purplish-maroon, 6-35 x 3-18 mm. *Inflorescences* terminal, arising from the apices of leafless pseudobulbs, densely packed with 5-25 flowers, peduncle and rhachis very short; *bracts* ovate, acute to acuminate, 2-4 mm long. *Flowers* small, glabrous but sometimes slightly verrucose on the outside, 8-11 mm long, tepals pale blue (sometimes tinged violet) with apices green, labellum whitish with green apex. *Dorsal sepal* oblong, subacute, 3.5-4.5 x 2.0-2.5 mm; *lateral sepals* 7.5-10 x 2.5-3 mm; *mentum* obtuse or bilobed at the apex. *Petals* obovate-spathulate, acute, 3-4 x 1.5-2 mm. *Labellum* simple, oblong-spathulate, apex subacute and slightly reflexed, divided into 3 sections when viewed from the side (Fig. 4, h) — the top section is separated by a distinct cross-ridge whilst the lower sections may be slightly constricted at the junction (Fig. 4, g), 7-9 x 2.5-3 mm (expanded). *Column* whitish, c. 1.5 x 1.5 mm; *column foot* 5-6 mm long; *anther* whitish tinged blue-violet, c. 1 x 1 mm; *pollinia* green, c. 0.6 mm long. *Ovary/pedicel* 7-9 mm long.

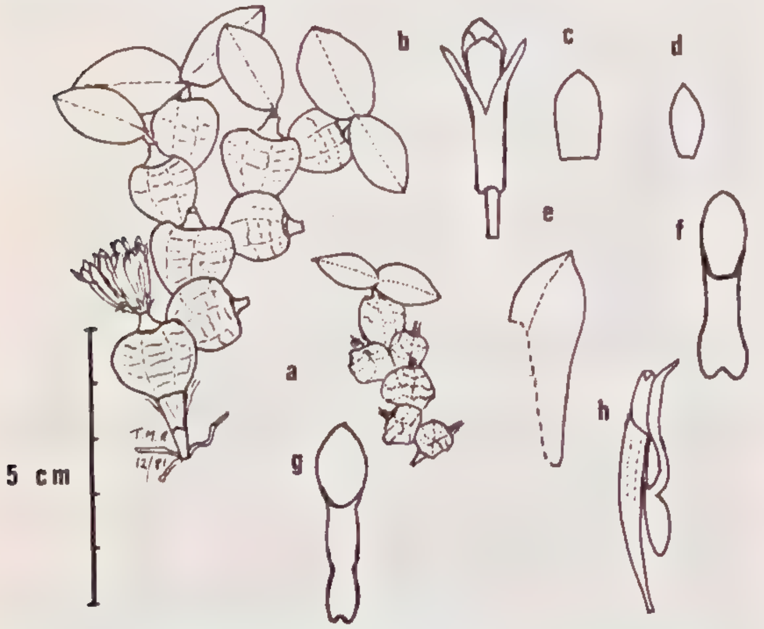


Figure 4. *Dendrobium leucocyanum*. Drawn from the Type plants (*Reeve* 308) at Laiagam by T.M. Reeve.
a. Portions of plants showing the variation in size
b. Flower
c. Dorsal sepal
d. Petal
e. Lateral sepal
f, g Labella showing the variation
h. Pedicel/ovary/column/labellum
a to indicated scale; b to scale x 3; c-h to scale x 4.

Holotype: Papua New Guinea: Enga Province, Lagaip District, Yengili valley via Laiagam, 2600 m, August 1979, *Reeve* 308 in LAE.

Isotypes: AMES, BISH, BO, CBG, E, K, L, NSW, UPNG, Herb RENZ (Basel).

Distribution: *D. leucocyanum* grows in the Wabag and Laiagam areas of the Enga Province between 2200 and 2600 m. In 1976 Alisdair Morrison from England showed me a small plant which he had collected near Wau, so this species may have quote a wide distribution.

Notes: *D. leucocyanum* is a very distinct species and is readily recognised by its small 2-leaved pseudobulbs which are brown, and by the whitish-blue flowers. In nature it grows on a range of host trees including *Nothofagus* and *Dacrycarpus*. Peter Piaoen of the Kaiap Orchid Lodge informs me that it often grows as an epiphyte on *Ficus dammaropsis* around Wabag.

This species grows well at Laiagam both on *Nothofagus* posts and on tree-fern. Flowering is non-seasonal, though all the plants flower approximately at the same time. From our records the main times of flowering over the past 6 years have been as follows: 1976 April to August; 1977 March to September; 1978 September to December; 1979 June to November; 1980 July to November; 1981 September to December. The flowers last about 2 months.

5. *Dendrobium nothofagicola* T.M. Reeve

Dendrobium nothofagicola T.M. Reeve *sp. nov.* pseudobulbis parvis rugosis repentibus et foliis crassis *D. simplici* J.J. Smith (sectionis *Latouriae*) simile sed ab illa specie foliis maioribus, portatis singulatim et racemo florum aurantiacorum flavorumque facile distinguitur; floribus illis *D. rutriferi* Reichb. f. similissimis sed species nova pseudobulbis parvis repentibus unifoliatis, inflorescentiis laxis et colore florum differt.

Description: A creeping epiphytic *herb*, usually growing downwards. *Roots* thick, white with orange tips, 2-4 mm diameter. *Rhizomes* usually distinct, prostrate, up to 4.0 x 0.4 cm. *Pseudobulbs* spherical to obovoid or clavate, rugose, brown to reddish-brown (sometimes yellowish-green) 0.8 -6.5 x 0.6-2.4 cm, new stems covered with white scarious sheaths and each bearing a single leaf at the apex. *Leaves* shortly petiolate, elliptic, obtuse sometimes subacute, very thick and leathery with 15-21 veins, green and slightly tessellated on the upper surface and usually suffused purplish underneath, 1.6-10.5 x 1.0-4.0 cm. *Inflorescences* terminal, on both leafy and leafless pseudobulbs, 3-20 flowers in a loose raceme; *peduncle* 3-7 mm long; *rhachis* 2-5 mm long; *bracts* ovate, acute to acuminate, 2-5 x 1.5-3.5 mm. *Flowers* small, glabrous, 11-15 mm long, yellow with orange mentum. *Dorsal sepal* broadly ovate, obtuse, slightly cucullate, 5-7 x 4 mm; *lateral sepals* 11-13.5 x 5-6 mm; *mentum apex* obtuse. *Petals* obliquely obovate, obtuse, slightly cucullate, 5-6.5 x 4 mm. *Labellum* simple, spathulate, obtuse, infolded at the apex with the margins finely denticulate (apex resembles closely *D. rutriferum* Reichb. f., — see footnote*), with prominent transverse ridge about 5 mm from the base, 10-13 x 7-8 mm (expanded). *Column* typical of the section, pale orange, 3 x 2.2 mm; *column foot* 7-8 mm long; *anther* pale orange, c. 1.5 x 1.8 mm; *pollinia* greyish c. 1.25 mm long. *Ovary/pedicel* orange, 11-17 mm long.

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* **FOOTNOTE:**

Dendrobium rutriferum Reichb. f. in *Gard. Chron.* ii: 746 (1887) et in *Lindenia* III:49 t119 (1887).

Synonyms: *Dendrobium puniceum* Rolfe in *Kew Bull.* p. 146 (1901); — non Ridley, 1886.
Dendrobium moirianum A.D. Hawkes in *Lloydia* 20(2):121 (1957).

This is a little-known member of section *Pedilonum* and grows near sea level on Rossel Island and probably in other parts of the Milne Bay Province as well. The plants are large (resembling *D. smilleae*) and have dense racemes of small purplish-pink flowers with whitish tips.

Holotype: Papua New Guinea: Enga Province, Wabag District, Yulimandaka via Sopas. Epiphytic on *Nothofagus*, 2400 m, June 1981 (From plants collected by Peter Ken for Kaiap Orchid Lodge), *Reeve* 551 in LAE.

Isotypes: E, K, NSW.

Distribution: *D. nothofagicola* has so far only been collected in the central range of Papua New Guinea and is recorded from the following Provinces: Enga, Southern Highlands, Western Highlands, Chimbu and Central (near Woitape). It grows between 1800 and 2800 m and is found usually as an epiphyte of the *Nothofagus* forests. Though widespread it is not common. The list of herbarium collections (other than the Type) are as follows:

Enga Province: Porgera District, Paiela Census Division, Komanga, 2500 m, April 1978, *Reeve* 233 (LAE); Ingalepe, 2200 m, March 1980, *Reeve* 360 (K, L, LAE).

Southern Highlands Province: Kagua District, Mt Murray via Samberigi, 1800 m, April 1980, *Reeve* 550 (LAE).

Chimbu Province: Sinasina District, Yobomorua, 2000 m, Sept. 1979, *Reeve* 541 (LAE).

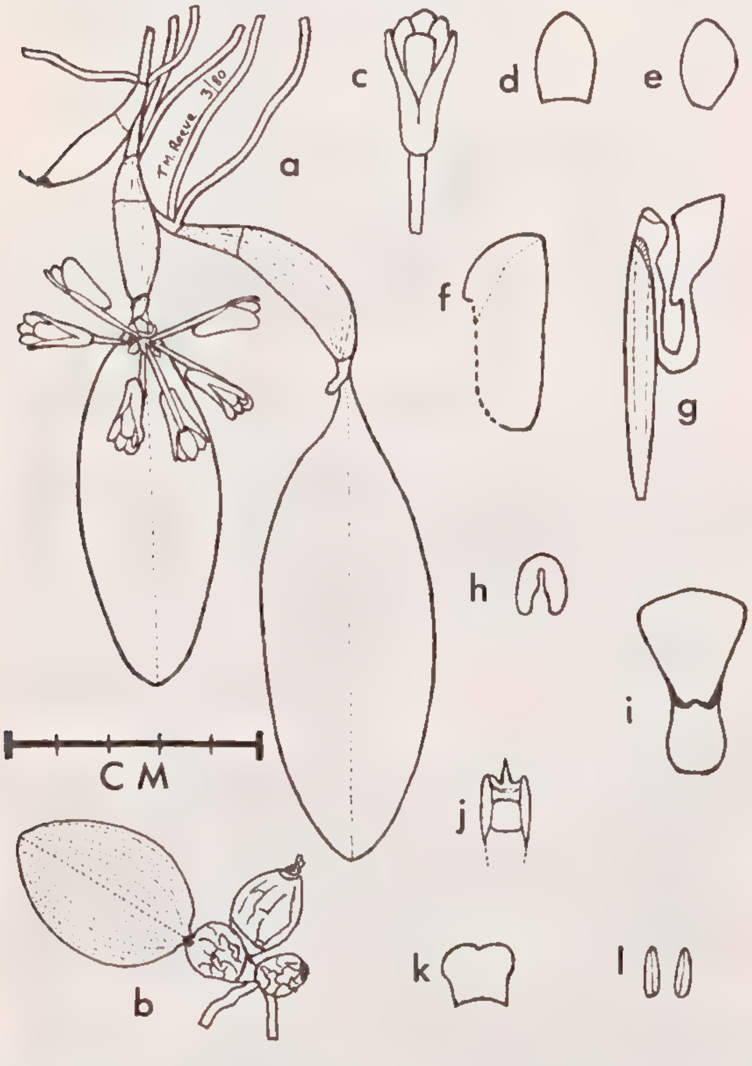


Figure 5. *Dendrobium nothofagicola.* Drawn from living material (*Reeve* 360) at Paiela by T.M. Reeve.

a. Plant showing the large leaves of some forms and the loose racemes of flowers
b. Portion of the Type plant (*Reeve* 551)
c. Flower
d. Dorsal sepal
e. Petal
f. Lateral sepal
g. Pedicel/ovary/column/labellum
h. Labellum (top view)
i. Labellum (expanded)
j. Column
k. Anther
l. Pollinia

a,b to indicated scale; c to scale x 2; d-i to scale x 3; j to scale x 5; k, l to scale x 8.

Notes: *D. nothofagicola* is a small creeping plant which is quite easy to recognise, even when not in flower, by the single-leaved pseudobulbs and by the remarkably thick and slightly tessellated leaves. In all plants examined so far the root tips are orange; a characteristic noted on several epiphytic *Dendrobium* species which grow mainly on *Nothofagus* trees. The inflorescences are lax and the flowers are orange and yellow.

At Laiagam this species does quite well on tree-fern fibre and on *Nothofagus* posts. It grows downwards which is something to remember when mounting. Here it does not flower very often in cultivation and probably requires a good drying out to initiate flowering.

6. *Dendrobium womersleyi* T.M. Reeve

Dendrobium womersleyi T.M. Reeve *sp. nov. D. aperto* Schltr caulibus ramosis et foliis aristato-acuminatis simile sed ab illa specie, labello elliptico non nisi subcucullato ad apicem, colore aurantiaco-flavo florum et polliniis flavis, distinguitur.

Description: A terrestrial or epiphytic, ± erect, *herb,* up to 1.2 m tall. *Roots* smooth, white with orange tips, 1-2.5 mm diameter. *Rhizomes* very short. *Stems* cylindrical, branched, somewhat flexuous towards the apex, brown (new shoots dark purple), many-leafed, 10-120 x 0.1-0.35 cm, with nodes 0.5-4.0 cm apart. *Leaves* lanceolate, aristate-acuminate, green, 1.0-4.2 x 0.2-0.9 cm. *Inflorescences* 1-3 flowered, arising from the upper nodes of both leafy and leafless stems, peduncle and rhachis short; *bracts* ovate, acuminate, c. 10 x 6 mm. *Flowers* medium to large, glabrous, 20-25 mm long, orange to golden-yellow. *Dorsal sepal* elliptic to lanceolate, subacute, 11-14 x 4-5.5 mm; *lateral sepals* 19-23 x 6-7.5 mm; *mentum apex* obtuse, often bilobed. *Petals* obliquely ovate-lanceolate, acute, 12-14 x 4.5-5.5 mm. *Labellum* elliptic (when expanded) with apex shortly but usually distinctly cucullate (rarely not cucullate), adnate to the column foot at the base for 2.5 mm, 16-20 x 8-10 mm (expanded). *Column* pale orange, c. 4 x 3 mm; *column foot* 8-11 mm long; *anther* whitish to yellow (sometimes brownish), c. 1.5 x 1.5 mm; *pollinia* golden-yellow c. 1.25 mm long. *Ovary/pedicel* orange sometimes greenish, 13-20 mm long.

Holotype: Papua New Guinea: Southern Highlands Province, Tari District, Mamuni ridge via Tani, 1800 m, July 1980 *Reeve* 394 in LAE.

Isotypes: AMES, BISH, BO, CBG, E, K, L, NSW, UPNG.

Distribution: *D. womersleyi* has, so far, been recorded only from the Enga, Southern Highlands and Western Highlands Provinces of P.N.G. from between 1500 and 1800 m. It is not common and except for the Type collection I have only ever seen a few small plants in any one locality. Other herbarium collections are as follows:

Western Highlands Province: Wahgi — Sepik Divide (Jimmi Valley), June 1955, *Womersley & Millar* NGF 7733 (BRI, CANB, NSW, K, L, LAE).

Note: This collection was not designated as the Type because the plants were still largely in bud. The stated altitude of origin is 8000 feet but I doubt whether this is correct. I have examined collections of several lower-altitude *Dendrobium* species from this Jimmi patrol which all have the altitude given as 8000 ft a.s.l., and it is very unlikely that all these species should occur together 2000 or more feet higher than any other record.

Southern Highlands Province: Tari District, Yakatianda via Dauli, 1700 m, July 1978, *Reeve* 334 (K, LAE): Tombete via Komo, 1800 m, July 1980, *Reeve* 546 (LAE): Kagua District, Komame ridge, Batri, 1500 m, April 1980, *Reeve* 576 (LAE).

Enga Province: Porgera District, Paiela C/D, Komanga, 1700 m, Oct. 1979, *Reeve* 547 (E, K, LAE).

Notes: *D. womersleyi* is an interesting species which is mid-way between sections *Pedilonum* and *Calyptrochilus,* and when not in flower it closely resembles *D. apertum*

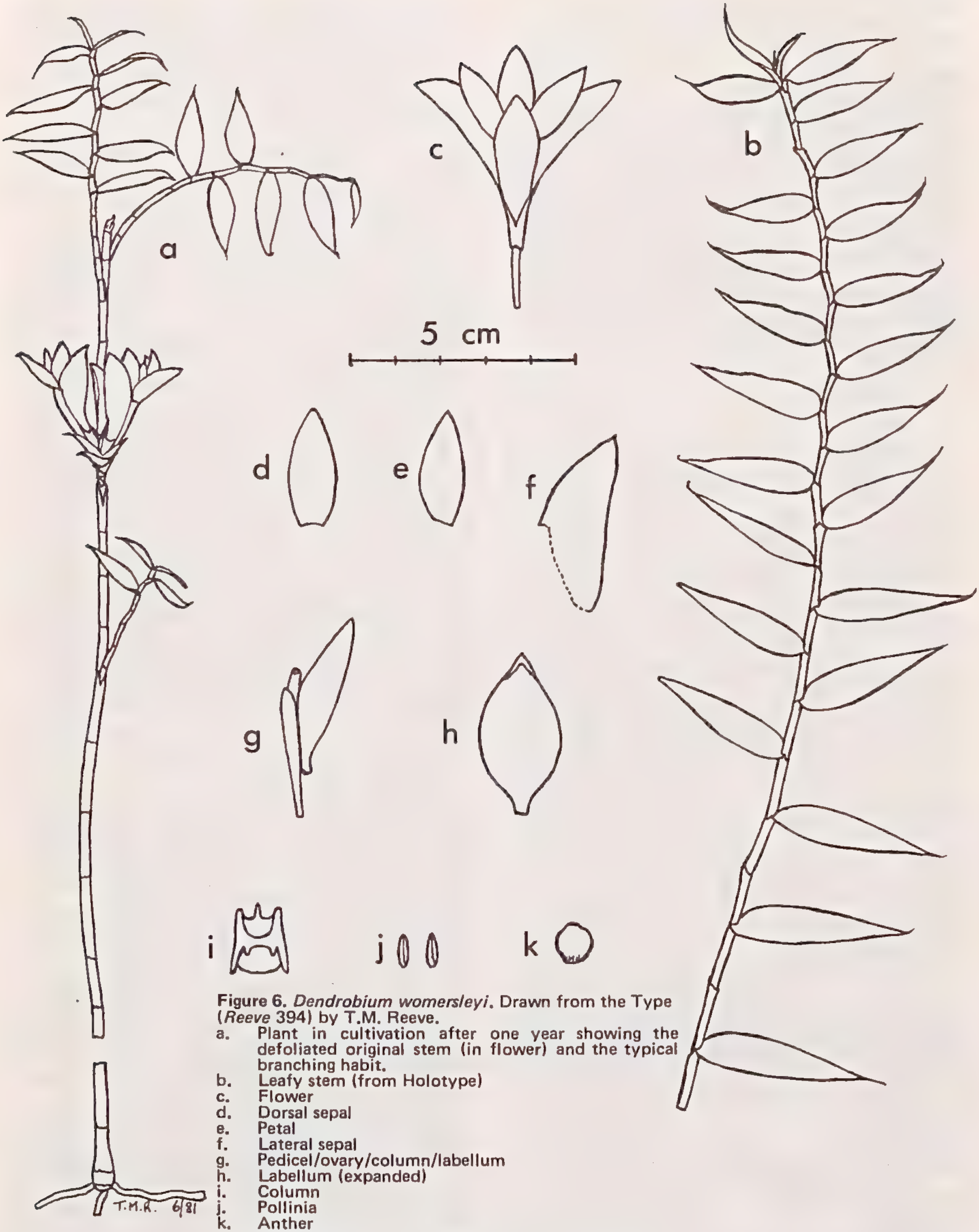


Figure 6. *Dendrobium womersleyi*. Drawn from the Type (*Reeve* 394) by T.M. Reeve.

a. Plant in cultivation after one year showing the defoliated original stem (in flower) and the typical branching habit.
b. Leafy stem (from Holotype)
c. Flower
d. Dorsal sepal
e. Petal
f. Lateral sepal
g. Pedicel/ovary/column/labellum
h. Labellum (expanded)
i. Column
j. Pollinia
k. Anther

a, b to indicated scale, c-h to scale x 2; i to scale x 4, k, j to scale x 6.

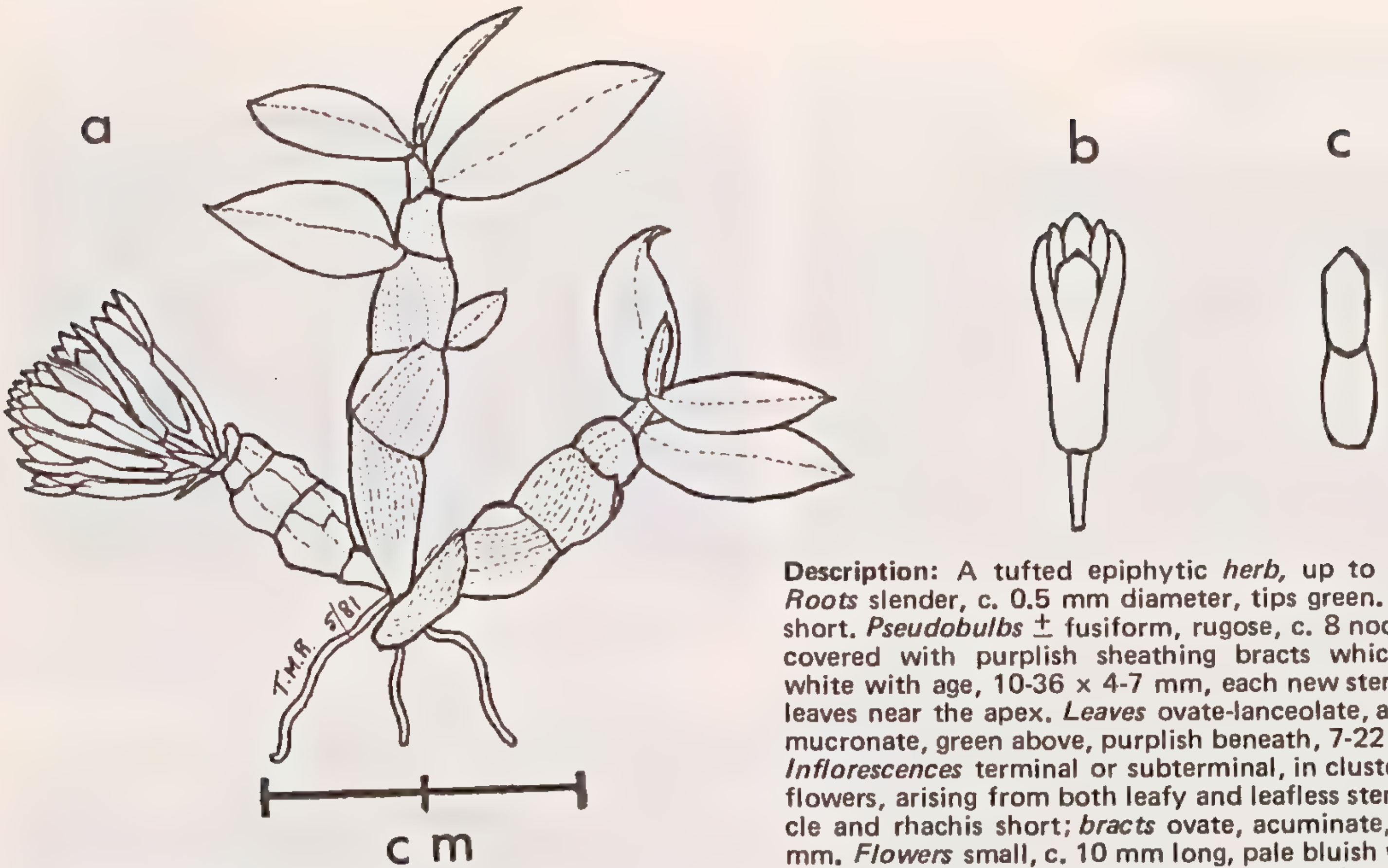


Figure 7. *Dendrobium* X *yengiliense.* Drawn from the Type (*Reeve* 445) by T.M. Reeve.
a. Portion of plant
b. Flower
c. Labellum
a to indicated scale; b, c to scale x 3/2.

Schltr of the latter section. It is the only New Guinea species belonging to this group which is known to have yellow pollinia. Sections *Cuthbertsonia, Calyptrochilus, Oxyglossum* and *Pedilonum* differ from other sections of *Dendrobium* by having non-yellow pollinia (usually grey, greenish or maroon). **I would welcome correspondence on the subject of the colour of pollinia in the genus *Dendrobium* since this information is not usually given in the description of species and it is difficult to ascertain from dried specimens.**

The flowers of *D. womersleyi* last for 2 or 3 weeks and vary from orange to golden-yellow. This species is usually found as a terrestrial, or rather semi-terrestrial, with its roots above the ground growing amongst the loose litter and moss that collects at the base of *Miscanthus* clumps and trees in filtered shade. This kind of habitat is rather difficult to duplicate. It grows reasonably well at Laiagam as a terrestrial in soil with loose tree-fern fibre on top. It does not grow satisfactorily on tree-fern slabs.

This new species is named in honour of its co-discoverer, Mr John Womersley, the former Chief of the Division of Botany in the P.N.G. Department of Forests. Mr Womersley continues to have an active interest in New Guinea orchidology, and has recently compiled useful indices to the orchid illustrations of R. Schlechter and J.J. Smith.

7. *Dendrobium* X *yengiliense* T.M. Reeve

Dendrobium X *yengiliense* T.M. Reeve *hybr. nov.* planta inter *D. leucocyanum* T.M. Reeve et *D. alaticaulinum* van Royen intermedia caulibus fusiformibus omnibus plurifoliis ovate-lanceolatis (7-22 x 2-8 mm); taxon probabiliter hybrida naturalis harum specierum est, floribus longis 10 mm coloratis partim caesiis *D. leucocyani* et partim purpureo-rubris oriandis ex *D. alaticaulino.*

Description: A tufted epiphytic *herb,* up to 4 cm tall. *Roots* slender, c. 0.5 mm diameter, tips green. *Rhizomes* short. *Pseudobulbs* ± fusiform, rugose, c. 8 nodes, brown covered with purplish sheathing bracts which become white with age, 10-36 x 4-7 mm, each new stem with 3-5 leaves near the apex. *Leaves* ovate-lanceolate, acute often mucronate, green above, purplish beneath, 7-22 x 2-8 mm. *Inflorescences* terminal or subterminal, in clusters of 5-12 flowers, arising from both leafy and leafless stems, peduncle and rhachis short; *bracts* ovate, acuminate, 3-5 x 2-3 mm. *Flowers* small, c. 10 mm long, pale bluish white with ovary, mentum and labellum (except apex) purplish and cross-ridge on labellum reddish. *Dorsal sepal* ovate, obtuse to minutely apiculate, 4 x 2-2.5 mm; *lateral sepals* c. 9 x 3.5 mm with base fused at front for c. 3 mm; *mentum apex* obtuse. *Petals* narrowly oblong to spathulate, acute, 4 x 1.5 mm. *Labellum* oblong-linear, subacute, apex slightly recurved, with a distinct transverse ridge in the centre, base saccate, c. 8.5 x 2 mm. *Column* typical of the section, c. 2 x 1.5 mm; *column foot* c. 5 mm long; *pollinia* greyish-green, c. 0.8 mm long. *Ovary* not distinctly ribbed; *ovary/pedicel* c. 10 mm long.

Holotype: Papua New Guinea, Lagaip District, Tarob, Yengili Valley via Laiagam, 2600 m, May 1981, *Reeve,* 445 in LAE.

Isotype: K.

Notes: A single plant of *Dendrobium* X *yengiliense* was collected amongst a population of *D. leucocyanum* in 1976 and a further 2 plants were found in the same locality in 1981. The only other common species belonging to section *Pedilonum* which grow in the Yengili valley are *D. alaticaulinum* van Royen and *D. caliculi-mentum* R.S. Rogers. These species are quite similar, differing mainly in size, and it is difficult to tell which of them is the second parent. The size of the flowers points to *D. alaticaulinum* as the probable parent but artificial hybridisation would be required to settle the issue. Flower lengths are as follows: *D. alaticaulinum* 8-12 mm, *D. caliculi-mentum* 14-17 mm, *D. leucocyanum* 8-11 mm, *D. X yengiliense* 10mm.

Dendrobium X *yengiliense* grows well on tree-fern at Laiagam and flowers more frequently than *D. leucocyanum*. However the flower colour is not as attractive as the two parent species and the hybrid is probably just of botanical interest.

Acknowledgements: I am indebted to Mr Neville Howcroft of the Forest Research Station, Bulolo, P.N.G. for permission to reproduce his illustration of *D. andreemillarae.* I wish also to thank Mr Joe Betts for translating the botanical diagnoses into latin and for his continued co-operation in promoting the study of New Guinea orchids.

Dept. of Primary Industry
Laiagam
Enga Province
Papua New Guinea

May 1982

PTEROSTYLIS CUTIE

by Les Nesbitt

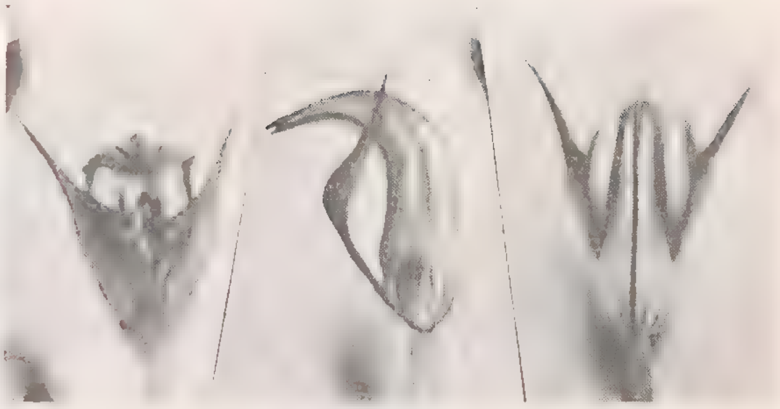
Let the following quotations tell the story of the first Greenhood hybrid to be registered.

1. From the *NOSSA Journal*, July 1980.
   "Plants on Display. Harold Goldsack called it a magnificent display, especially the terrestrials." .... "Harold's own hybrid greenhood, *Pterostylis baptistii x Ptst. cucullata,* had a large green and brown flower on a tall stem. The cross was made in 1973 but before the seed could be collected the pod ripened and split open. Some seed germinated in an adjacent pot of cymbidium and one plant flowered in 1976. There were two flowers in 1977 and six in 1978 showing that the hybrid multiplies rapidly. The hybrids were then separated from the cymbidium and potted up on their own. There will be 51 flowers in 1980."
2. *NOSSA Journal*, August 1981.
   "Popular Vote: ....
   Ptst. baptistii x cucullata (H. Goldsack)
   It is not surprising Harold took the terrestrial vote with his *Ptst. baptistii x cucullata* hybrid as this is an excellent clone created by himself and grown from a single seedling — a fine effort indeed."
3. *NOSSA Journal*, September 1981.
   "NOSSA Award No. 6.
   An Award of Commendation was granted at the August Committee Meeting to Harold Goldsack for *Ptst. baptistii x cucullata."*
4. *NOSSA Journal*, October 1981.
   "Australian Terrestrial Orchid Hybrids — Part III Man-made Hybrids" . . .by R. Bates
   "Most of the crosses made have been with Pterostylis, the greenhoods. The best of these so far is Harold Goldsack's *Ptst. baptistii x cucullata."* . . . "an excellent cross with large attractive flowers on tall sturdy stems."
5. *NOSSA Journal*, December 1981.
   "Tuber Bank Order Form"
   "Lot 20, *Pterostylis baptistii x cucullata."*
6. **The South Australian Orchid Bulletin, February, 1982 "OCSA Inc Awards granted. Year ended 30th Nov. 1981."**
   "No. 142 (17-8-81) *Pterostylis* Cutie (Registration applied for) 'Harold's Pride'. Grown by L.T. & M.K. Nesbitt. **A.M./OCSA (82.4)"**

Application was made to the Australian Orchid Council for a National Award but the application was rejected. No reasons were given. The flowers are very dark in colour and it is difficult to capture their appeal on film. The various State Judging Panels must judge from slides alone. Perhaps the application was a bit before its time. Certainly the existing AOC and ANOS Standards were not written with single flowered terrestrials in mind.

Pterostylis Cutie 'Harold's Pride' has a rosette of 4-7 glossy green leaves at ground level and a very strong stem, up to 350 mm tall, bearing a shapely brown and green flower 49 mm high and 18 mm wide across the galea. The back of the dorsal sepal is white with distinctive green vertical veining, reminiscent of an albino maudiae-type paphiopedilum. The front of the flower is dark brown and has a velvety texture which is most attractive. The top of the galea is also dark chocolate brown but has a smooth surface. The plants grow, multiply and flower freely. Flowering period in Adelaide is July to September.

18 Cambridge Street,
August 25, 1982 Vale Park, S.A. 5081.



Front Side Rear

Pterostylis Cutie — (= *baptistii x cucullata*)

LETTERS TO THE EDITOR

Dear Sir,

Feedback from Switzerland

In the September issue of "The Orchadian" (Editorial page) you invited comment on "Feedback and Follow-up". I would like to answer as follows:

1. **Editorial:** This is the only page I **always** read! It tells me what's going on! I know only one other orchid periodical with an interesting editorial — the A.O.S. Bulletin.
2. **Index to Vol. 6:** Comprehensive indexes to important contents of periodicals are a **must**, otherwise readers may as well throw them away each year. Such valuable collections of botanical material as "The Orchadian" provides are useless without an index. I have a nice orchid library (both books and periodicals) but, without the various indexes from "Schuster", "Hamiltons" and Woolfson to those of the individual periodicals, I never would be able to work with the books in my library.

Your editorial (September) began with "Spring comes round again". Here in Switzerland Autumn has arrived and winter is coming soon.

Sincerely yours,
Ulrich O. Graf
Im Brand 6
CH 8600 Dubendorf
20 September, 1982 Switzerland.

[The September Orchadian *was posted on or after 10/9/82. I received this feedback on 29/9/82! Its promptness warmed the editorial heart. "Editorials" will continue and we hope to produce a consolidated index to volumes 1—5 next year — Editor.]*

Dear Sir,

Dendrobium teretifolium **— Distribution**

In Don Barnham's excellent article (September issue) some minor mistakes were made in the distribution of two of the varieties of *Dendrobium teretifolium*. Var. *fasciculatum* is the north Queensland variety. It extends from the Portland Roads area, north of the Iron Range area, south to the Burdekin River. Possibly it extends further north and south of these places. Var. *fairfaxii* forma *aureum* extends from the Richmond River (N.S.W.) into southern Queensland where its northern limit is not known. It is the only form found in the mountain rainforests between Brisbane and the N.S.W. border. In this region it is quite plentiful. The habitat details described by Don for the varieties and forms of *D. teretifolium* are done very well.

In the "Preliminary Checklist of Australian Orchidaceae", M.A. Clements reported both var. *fairfaxii* forma *fairfaxii* and var. *fairfaxii* forma *aureum* as extending to north Queensland. This is not so in my experience.

Steve Clemesha,
Lot 6 Skinner Close,
Avocado Heights,
27 September, 1982 Woolgoolga. N.S.W. 2456

MONA VALE 1982

by Michael Harrison

**Dendrobium Hilda Poxon.
Champion Native Orchid Hybrid owned by Wal and Jill Upton.**

The Eighth Annual Spring Show 1982, held at Mona Vale, Sydney, on 11th and 12th September, once again proved the old adage: "nothing succeeds like success". By the time the judges had finished their difficult and thankless task at about 9.45 on Saturday morning, the hall was already crowded near to its capacity and it stayed that way for most of the weekend. Approximately 1400 paying customers were admitted and, considering that pensioners and children are not charged, it was estimated that there were nearly 2000 visitors.

ANOS Wollongong Group again attended the show and their display was excellent. Indeed, a fine specimen of *Sarcochilus olivaceus* near the front of their display was seriously considered by the judges when they were deciding on the Champion Native Species Orchid. Perhaps next year ANOS Central Coast Group will be persuaded to match this south coast group.

Eric Webeck's magnificent *Dendrobium X delicatum* really is becoming an institution. For the third year in a row the Champion Specimen Native Hybrid was awarded to this orchid. As well as being virtually unbeatable as a specimen plant it is also a top quality *D. X delicatum* and each year I am amazed at how well Eric is able to flower it. Champion Native Hybrid Orchid was awarded to a lovely D. Hilda Poxon exhibited by Wal and Jill Upton. An old gold in colour and borne on semi-pendulous racemes, the flowers displayed themselves beautifully, providing a focal point in the centre of the display that won for the Uptons second prize in the display section.

First prize in the display section was awarded to Phil Spence with a powerful exhibit of both quality and quantity. His plants of Sarconopsis Lavinia (*Phalaenopsis amabilis* var. *papuana* X *Sarcochilus hartmannii*), one of which took out first prize in Best Sarconthinae Hybrid, were truly lovely and this direction in hybridising certainly shows great potential. Phil Spence also took second prize in this section with *Sarcochilus* Phyllis X *S. hartmannii*, another beautiful hybrid which displayed spotted, deep pink flowers on an erect spike.

The two other championship prizes were awarded to myself. A plant of *Plectorrhiza tridentata* was awarded Champion Native Species Orchid. Although not a large plant, it exhibited exceptional flowers which were 11 mm tall, a bright apple-green in colour and nicely displayed on two pendulous spikes. Champion Specimen Native Species Orchid, the W.H. Murdoch Award, went to *D. canaliculatum*, a beautiful plant, well established on a 40 cm length of "paperbark" and bearing twenty-four tall, arching racemes carrying hundreds of yellow and white flowers. My natural modesty aside, I was very pleased with the way this plant performed this year. The first flowers began to open in late July and, hoping to make them last, I moved the plant out of the heated glasshouse (min. 15° c) and into my cold fibreglass house (min. 2° c) in mid-August. This manoeuvre certainly proved successful, for while the remainder of the flowers opened normally, the early ones stayed in perfect condition and by the time of the show nearly all the flowers were fully open and not one had faded.

Some interesting tropical species also appeared on the show bench. Apart from *D. canaliculatum,* plants of *D. discolor, D. semifuscum* and *D. antennatum* were present, as well as the spectacular *D. spectabile* in Phil Spence's display. The diminutive *Oberonia carnosa* also made its presence felt with first prize in the Best Other Epiphtyic Species.

The terrestrial sections were again dominated by David McAlpine. His pot of *Pterostylis ceriflora,* the seriously endangered "Illawarra Greenhood" was awarded Best Pterostylis Species and a plant of *Caladenia dilatata* took second prize in the Best Other Terrestrial Section. A *Diuris punctata* in Wal and Jill Upton's display was awarded first in this section, so David did not have it completely to himself. Unfortunately, there were no Phaius species benched this year; which I feel is a pity, for a well grown and flowered plant is an asset to any show.

As in previous years, there were many exhibits worthy of note; far too many to mention here. Garry Wells's display of slides proved very popular and, again, Chris Arnott's display devoted entirely to *D. kingianum* was excellent.

Warringah and Sydney Groups are to be congratulated on another successful show.

FRIENDS OF THE ROYAL BOTANIC GARDENS SYDNEY

is a Society that has recently been formed to foster greater community awareness and involvement in the Gardens. It is to encourage the use and enjoyment of the Gardens and the appreciation of their scientific, educational, historical, cultural and recreational functions. The National Herbarium, within the Gardens, and the satellite garden at Mt Tomah in the Blue Mountains are, of course, within the scope of the 'Friends' Society.

Enjoyment of the Gardens can be simply wandering over the 30 hectares of specimen trees and shrubs, climbers, herbaceous perennials and annuals; or absorbing history at the site of the first farm in Australia on the foreshores of Sydney Harbour. Close by are the finest landmarks: the Opera House, the Art Gallery of N.S.W., Government House, Macquarie Street and the State Library. The newly built National Herbarium of N.S.W. houses about a million specimens ranging from the earliest collected by Joseph Banks and David Solander on Cook's voyage of 1770, to the ever-increasing collections of today.

To become a 'Friend' is to share these treasures. Ordinary membership for individuals and societies is $20 annually; family membership is $25; students and bona fide pensioners, $15. For application forms write to the Executive Officer, Friends of the Royal Botanic Gardens Sydney, Mrs Macquarie's Road, Sydney, N.S.W. 2000, or telephone 231 8182.

The True Affinities of *Dendrobium bairdianum* F.M. Bail.

by P.J. Cribb

In the course of preparing the final draft of *Dendrobium* section *Latouria* for publication in the Kew Bulletin it has become apparent that *D. bairdianum*, one of the two Australian species generally attributed to the section (Dockrill, 1969, does not belong there. It superficially resembles in its flower shape, size and colouration the other native species in the section, *D. bifalce* Lindl., a more widespread plant also found in New Guinea, Timor and the Bismarck Archipelago. However, it differs markedly in having leaves which are articulated to distinct sheathing bases, a character not found elsewhere in the section. In addition, the lip shape and callus structure are also not typical of *Latouria*.

If *D. bairdianum* is removed from sect. *Latouria*, as it undoubtedly should be, the question remains as to its true affinities. These almost certainly lie with section *Eleutheroglossum* Kraenzl., a small section of only three species from New Caledonia. This section is characterised by its somewhat clavate pseudobulbs, leaves with a distinct basal sheath and flowers with an incurved-conical mentum and a narrow 3-lobed lip with a large emarginate mid-lobe and a 2-ridged more or less rugulose callus. The New Caledonian species, *D. poissonianum* Schltr, *D. ngoyense* Schltr, and *D. closterianum* Rchb. f. have recently been considered in some detail by Hallé (1977) and his text is accompanied by detailed drawings of the plants and floral dissections.

Comparison of both herbarium material and published illustrations of *D. bairdianum* (Dockrill, 1969; Nicholls, 1969) and of the New Caledonian species reveals a remarkable similarity in both their vegetative and floral morphology. In particular, in its flower shape and callus structure *D. bairdianum* seems closely allied to *D. poissonianum* differing in its slightly broader tepals, more coarsely rugulose callus and the acute side lobes of the lip.

I have no hesitation therefore in transferring *D. bairdianum* to section *Eleutheroglossum*. Ironically, the only other Australian species referred to that section (Dockrill, 1969) is *D. canaliculatum* which undoubtedly belongs elsewhere in section *Ceratobium* (Lavarack & Cribb, in press).

Finally, *D. bifalce* now considered the only Australian species of section Latouria is itself somewhat aberrant in the section for although vegetatively similar to other species such as *D. spectabile* it is unusual in having a flower in which the lip has narrow acute side lobes and a rugulose callus. I do not intend to remove it from the section at present but merely wish to draw attention to its peculiarities. Undoubtedly the sectional treatment of *Dendrobium* suggested by Schlechter (1912) needs revision. Readers of the *Orchid Review* will appreciate from the comments of Holttum (1982) that the answer does not lie in the recent reclassification of *Dendrobium* advocated by Brieger et al. (1981).

Acknowledgements

I would like to thank Dr P.S. Lavarack and Mr D.F. Blaxell for their help and the Directors of the Queensland Herbarium and the National Herbaria of New South Wales and Victoria for the loan of specimens.

References

Brieger et al (1981). 39 Subtribus: Dendrobiinae. In Schlechter, Die Orchideen ed. 3 1(11, 12): 636-646.

Dockrill, A.W. (1969). Australian Indigenous Orchids Vol. 1. Sydney.

Holttum, R.E. (1982). Book Review: Parts 11 and 12 of the new Schlechter. In Orchid Review 90: 249-250 (August, 1982).

Nicholls, W.H. (1969). Orchids of Austrlaia. Nelson, Melbourne.

Schlechter, R. (1912). Die Orchidaceen von Duetsch-Neu-Guinea: Dendrobium. In Fedde Repert. Beih. 1: 440-452.

**Royal Botanic Gardens,
Kew, Richmond,
Surrey, TW9 3AB England**

8 September, 1982

BOOK REVIEW

**GROWING ORCHIDS IN AUSTRALIA
and NEW ZEALAND —by Gordon C. Morrison.
Published by Kangaroo Press (1982), 3 Whitehall Road, Kenthurst, 2154, N.S.W. Australia. 80pp., 48 colour plates, 15 figures. Stiff paperback 24 x 18 cm.
Price $(Aus.) 8.95.**

Most books on orchids are descriptive of the orchids rather than the 'cultivation'. There is no doubt that really good books on the practical problems of growing the plants are in short supply. This book is one of the few.

It attempts to present both the science and the horticulture without overpowering the reader with the former or oversimplifying the latter. Although not specialising in Australian native orchids this book will appeal to native orchid enthusiasts as much as to any other grower.

The plan of the book is to present eleven "Chapters" that treat the subject matter in a general way, leaving the more complex or difficult information to the six "Topics" and three "Appendices". This I found to be a refreshing approach and I think other readers who have read numerous books on orchids will also feel there is something new about it. Its structure should have some appeal for the experienced reader in this field. The novice will get answers to his elementary questions about the nature of orchids, how to obtain them, house them and care for them. He or she can then turn to the "Topics" for more advanced information as required.

Although Mr Morrison's knowledge is based on a greater-than-usual study of biological and botanical science, he does not write "down to the reader". No doubt many will find it somewhat heavy on the side of science, even in the "Chapters" as distinct from the "Topics". On the other hand readers who have become familiar with the overworked and often inaccurate terminology of amateur lecturers at society meetings may find it unusual to read about "substrates" rather than "media" or "mixes" or "compost"; similarly they will read "geophyte" instead of "terrestrial" and will learn that the leaching of excess nutrients and sugars from the living leaves of host trees forms a more important source of nourishment for epiphytic orchids than do the decomposing leaves and bird droppings so often referred to in less meticulous books on orchids. In fact Mr Morrison's book explodes quite a number of popular fallacies of this kind. This is done more or less in "asides" or digressions from the main purpose of the practical "Chapters" — which contain all that the newcomer to orchid growing will need to find out in due course. It is better that the novice be informed thoroughly, as in this book, than that he or she rely upon the "Old wives' tales" heard at club meetings.

The Chapter on "Pests and Diseases" for example is notable for its "no nonsense" treatment of the subject. The experienced grower will recognise that Mr Morrison, instead of tediously detailing the many commercial products available, has reduced his recommendations to a minimum — leaving it to the intelligent reader to "read the label" and to apply common sense in choosing between natural predators and/or methylated spirits on the one hand and the lucrative but lethal chemicals on the other hand.

Topic 1, on "The Glasshouse" in conjunction with Topic 6 ("An Electronic Thermostat for the Glasshouse") will be eagerly read by enthusiasts who are capable of applying some technical knowledge of electronics to the automation of their equipment. They will benefit from the writer's advanced experience in this field.

The Colour Plates and accompanying descriptions of plants (mainly exotic species but including five Australian natives) are of good quality. Although there are 48 colour plates this is definitely not one of those big glossy picture-books that are short on useful information and often full of errors in plant names. If you like coffee-table books for people who can almost read, this one is not for you. If you are a discriminating reader — either novice or experienced grower — you will find the book useful as a continuing aid to practical orchid growing. At $8.95 and very attractively produced it is good value.

—Editor

IS THIS CONSERVATION?

by G.F. Walsh

During the past two years, I have had some baffling experiences with two of this (N.S.W.) State's most conservation oriented Departments. They are the N.S.W. National Parks and Wildlife Service, and the Forestry Commission of N.S.W. My experiences have left me pondering the motives and policies pursued by these Departments.

My first tale relates to a property owned by my family clan continuously for 130 years. The property is located in the Illawarra district, just south of Sydney. Twenty-five years ago the financial viability of the property declined to such a low ebb, that the easier life to be found in Sydney promised a more reliable source of income. So the old dairy farm was abandoned. It was not sold; but retained and used on weekends and holidays as a welcome refuge from the city rat race. Rising land rates, access roads and the like finally forced the decision to sell out. But to get a reasonable price, many miles of ricketty fencing would have to be upgraded. Fences cost money; so a local logging contractor was given the nod to log the property and, in return, build the fences and roads.

Mostly, the vegetation is wet sclerophyl interspersed with good stands of warm temperate rainforest and a few good pockets of sub-tropical rainforest. Native orchids are abundant.

Here is where I enter the story. The decision to sell out and permit logging was beyond my influence, but I made up my mind to make the orchids my main concern. I had to salvage them! If the timber cutters entered the right areas, and that seemed inevitable, many of the orchids would be destroyed. I decided to do things the legal way, and so I applied to the National Parks and Wildlife Service for a licence to remove protected plants from private property. A licence was promptly granted.

So far, so good. I was anticipating a vigorous investigation prior to official permission being given; but that was not to be. On my application form I listed ten species of epiphytic orchids, five fern species and one palm species as the plants I wished to remove. Permission was granted to remove all the species I had listed, with varying numbers of tags supplied for each species.

What surprised me is this. At no time did a representative of the Service examine the property to establish if my request was legitimate or even if the said plants were growing there. **I could easily have been the biggest plunderer of protected plants in Australia and nobody would have known.** But my story does not end here.

The licence was to be valid for six months, quite sufficient time for the purpose. But government departments seem to do some strange things at times. Three weeks after the licence expired, I received a letter from the Service. I just could not believe my eyes when I studied the contents. The Serivce was apologising to me for being three weeks late in sending a licence renewal form. I was courteously informed that I should fill it in and rush it away, once again listing the number of plants I would require. Here I was in a situation that some of our more indiscriminate nurseries would surely be envious of. **Here was a gold pass to wholesale vandalism.** I do not know if mine was an isolated case or normal procedure; but I sincerely hope it was unique. The good news is that the fences were erected and no orchid territory was violated. Mother Nature was victorious for once.

My next experience with officialdom began with an expedition to a famous rainforest haunt and orchid eldorado on the N.S.W. mid-north coast. I had never before seen an area so rich in *Dendrobium X gracillimum.* On a 500 metre stretch of a large and isolated creek, I found dozens of clumps of this orchid lying on the ground and even in the water. Many other species were in similar circumstances. It was enough to make an orchid lover cry — clumps of *D. X gracillimum* everywhere, some as large as a garbage can. Wallabies had damaged many plants already, but nothing that the following burst of Spring growth could not rectify.

As everyone knows, most of our rainforests often display similar scenes. It's all a part of Nature's grand plan. But with a very uncommon orchid like *D. X gracillimum,* it is just plain wasteful.

So in I went to bat for this underdog. As the area is part of a large State Forest, I contacted the district Forestry Commission office. I requested permission to remove a good number of these orchid casualties; all if possible. I went to great lengths to explain that only plants which had fallen to the forest floor would be removed, and that no financial gain would be sought. I explained the rarity of *D. X gracillimum* and gave assurances that the plants would be well cared for by myself or other orchid enthusiasts. I might add that they could only be recovered with a great deal of physical effort, and a good supply of petrol as well. A small price to pay.

Now I don't think I'm hard to get on with; and in matters such as rainforest ecology I am very well versed. But the Forestry Commission's reply made me see red. I was told that a well known charity organisation had exclusive rights to nearly the whole State Forest. I have absolutely no objection to this arrangement; it is to be commended. But nobody was going to find the area I was referring to, unless they were a mountain goat x platypus.

Secondly, it was pointed out to me that fallen plants were looked on as an integral part of the recycling system of a rainforest. But I cannot accept that the removal of a few plants could pose a threat to the national economy, or cause an imbalance to the rainforest ecosystem. What it would mean, however, would be that a comparatively rare natural hybrid would have more of a chance of survival in this rugged world.

But that is not the end of the story. I was told that several areas were available in which I would be given permission to collect protected plants. Alas, it would seem that the love of the dollar has a higher priority rating in the eyes of the Forestry Commission than does the conservation of an endangered orchid. If I was interested in these other available areas, it would be necessary to pay royalties to the Forestry Commission for each plant removed. I was not told how much the royalties would be, and in any case, I didn't care. I was only concerned with those *D. X gracillimum* plants. I would have been willing to pay a small royalty for the privilege of saving them; but I wasn't given the chance.

What a shame it is that such an important organisation as the Forestry Commission is so totally inflexible. And what a paradox when compared with the National Parks and Wildlife Service.

I guess those *D. X gracillimum* plants are now just little heaps of compost. Maybe a few are still alive, struggling and degenerating. I don't think many wallabies would have died if the plants were removed. Conservation of wallabies is, of course, much more important than the conservation of a few rare orchids! The Forestry Commission could explain that better than I.

Surely there is an altenative solution — one based on good old common sense.

55 Pembroke Street,
Cambridge Park
N.S.W. 2750

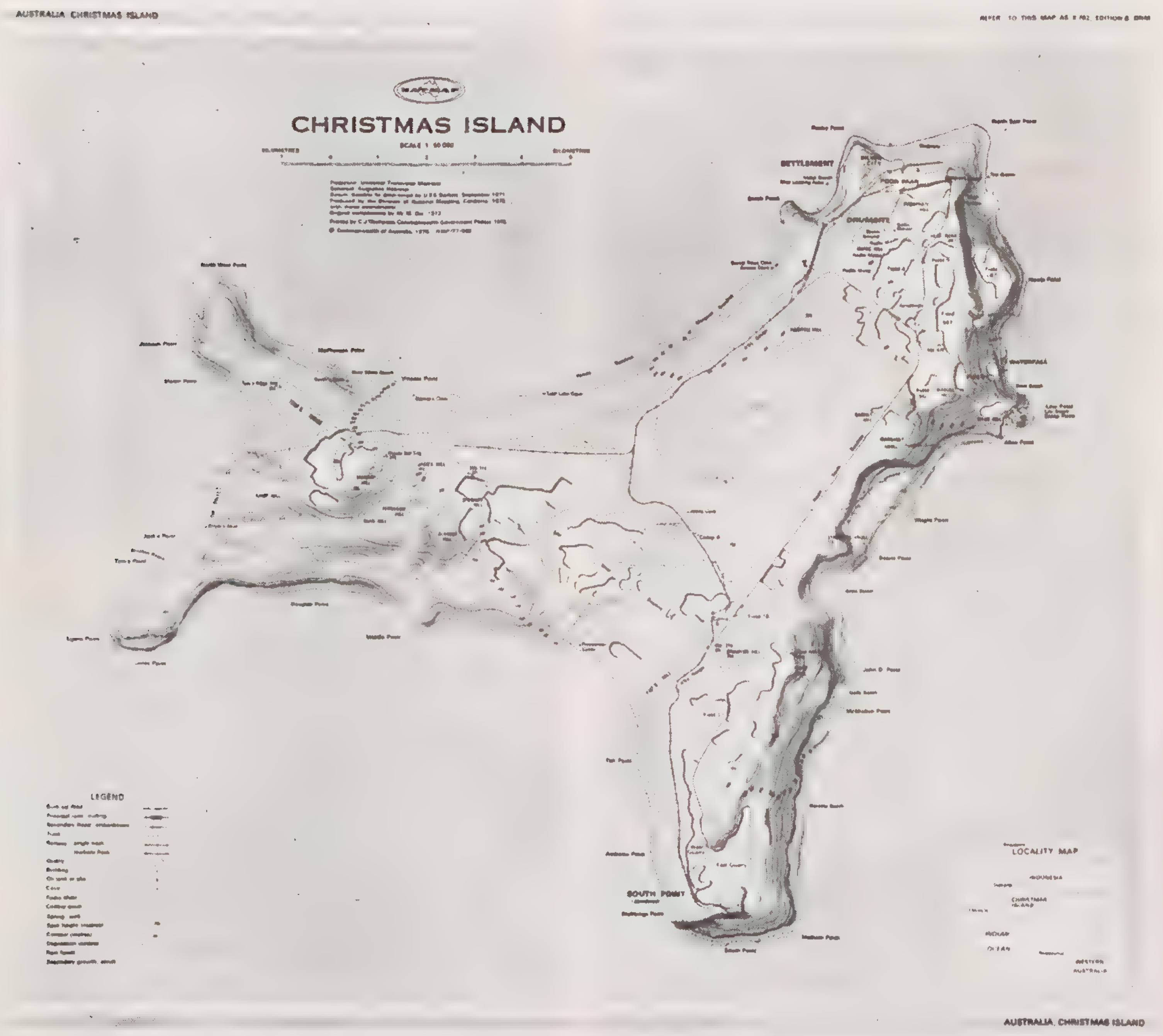
8 July, 1982

THE ORCHIDS OF CHRISTMAS ISLAND

by Jeffrey J. Wood

Christmas Island, not to be confused with the Pacific island of the same name, is situated in the Indian Ocean at 10°25′S and 105°39′E, some 360 km south of Java, 417 km north of the Cocos-Keeling Islands and 1448 km from the coast of Western Australia. It is an irregularly quadrangular island about 135 sq. km in area and rises at Murray Hill in the west to a maximum height of 361 m. It consists of a central plateau descending to the sea in a series of three terraces and surrounded by steep cliffs. The plateau surface is studded with hills, low ridges and reefs of coral limestone. Extensive deposits of phosphate of lime occur on these hills giving the island considerable commercial importance.

Christmas Island, photo M. Svanderlik



The first record of the island's existence can be traced to a Dutch map dated 1666 where it is named 'Moni'. A little later the first recorded visit was undertaken by Dampier in March 1688. The island's discoverer and the origin of its name still remain unknown.

The island was formally annexed on 6th June 1888, placed under the administration of the Governor of the Straits Settlements in 1889 and incorporated with the settlement of Singapore in 1900. Sovereignty was transferred to Australia on 1st October 1958.

The first plant collections were made during a visit by Captain Maclear of the survey ship 'Flying Fish' in 1886, after which the one safe anchorage and site of the first and only settlement at Flying Fish Cove was named. The first serious exploration was undertaken by Captain Pelham Aldrich of H.M.S. Egeria in 1887 accompanied by the naturalist J.J. Lister who, during a week's stay, made extensive collections of the native fauna and flora. Mr H.N. Ridley of Singapore Botanic Garden spent ten hours on the island in August 1890 collecting around the Cove and on the Plateau. He recorded seven orchids, two of which, *Saccolabium archytas (= Brachypeza archytas)* and *Sarcochilus carinatifolius (= Thrixspermum carinatifolium)* were new to science. He commented that 'orchids were abundant, the most common being *S. archytas'*. During the years 1897 and 1898 Mr C.W. Andrews of the geological department of the British Museum carried out a detailed scientific survey and in 1900 his results were published in a fascinating monograph which remains the most comprehensive account of the island. On page three he writes, "on approaching nearer, it can be seen that the whole island is covered by a dense forest, broken only by the grey face of the high inland cliff which runs around the greater part of the island, rising like a wall above the tall trees growing on the shore terrace". Ridley visited the island again during September and October 1904 and found ten orchids, the maximum number of species so far recorded. Three of these, *Corymbis angusta (= Corymborkis veratrifolia), Dendrobium pectinatum (= Flickingeria nativitatis)* and *Zeuxine exilis,* he described as new to science.

KEY

Plants terrestrial, saprophytic or autophytic:
  Plants saprophytic, leafless, 5-12cm high; flowers white, lip flushed yellow . . .1. *Didymoplexis pallens*
  Plants autophytic, leafy, 25-310cm high; flowers otherwise:
    Plants small, 25-35cm high; leaves not plicate, elliptic, 2.5-6 x 1-1.8 cm 2. *Zeuxine exilis*
    Plants large, 40-310cm high; leaves plicate, narrowly elliptic or ovate, 15-50 (-110) x 3-14 (-18) cm . . . . .3. *Corymborkis veratrifolia*
Plants epiphytic, autophytic:
  Stems elongated, 24-90cm long; flowers usually ephemeral:
    Stems swollen near base, leafless towards apex; flowers large, white, fragrant. . . . . .4. *Dendrobium crumenatum*
    Stem not swollen near base, leafy throughout; flowers small, colour otherwise:
      Stems naked, producing a succession of fusiform, 1-leaved pseudobulbs each 2-4cm long . . . . .5. *Flickingeria nativitatis*
      Stems covered in sheathing leaf bases, without pseudobulbs. . . . . .9. *Thrixspermum carinatifolium*
  Stems much shorter, 1-10cm long; flowers not ephemeral:
    Stems with pseudobulbs:
      Pseudobulbs narrowly conical, often curved, 2-leaved; leaves narrow, 0.3-0.6cm broad; peduncle with rhachis tomentose, to 2cm long. . . . . .6. *Eria retusa*
      Pseudobulbs vertically and obliquely compressed, 1-leaved; leaves broader, 0.8-1.5 (-2) cm broad; peduncle with rhachis glabrous, 7-18 cm long. . . . . .7. *Thelasis capitata*
    Stems without pseudobulbs:
      Plants small; leaves to 8 (-10) x 0.4 cm; flowers minute . . . . .8. *Phreatia listeri*
      Plants large; leaves to 21 x 2 (-3) cm; flowers much larger . . . . . . .10. *Brachypeza archytas*

A preliminary checklist of the Orchidaceae of Christmas Island, Indian Ocean:

1. *Didymoplexis pallens* **Griff.** in Calc. Journ. Nat. Hist. 4:383, t. 17 (1844).

Type: India, 'Prope caespites Bambusarum, Calcutta, Serampore' (CAL, holo.).

Distribution: Christmas Island: Woods in the centre of the island towards Murray Hill, growing among a carpet of *Acrostichum,* 1904, **H.N. Ridley** s.n. (?SING). India to Java.

2. *Zeuxine exilis* **Ridl.** in Journ. Straits Branch Roy. As. Soc., 45:236 (1906).

Type: Christmas Island, Murray Hill track, October 1904, **H.N. Ridley** s.n. (K, lecto!, BM, iso.!).

Distribution: Endemic. 'Centre of the island, among ferns, not rare', according to Ridley (1906).

3. *Corymborkis veratrifolia* **(Reinw.) Bl.**, Fl. Java, Coll. Orch., 125, plate 42, fig. E, plate 43, fig. 1 (1859). **Lectotype: Blume**, Fl. Java, plate 42, fig. E and 43, fig. 1 (1859).

Hysteria veratrifolia **Reinw.** in Sylloge Pl. Ratisb., 2:5 (1826).

Corymbis angusta **Ridl.** in Journ. Straits Branch Roy. As. Soc., 45:234 (1906).

Type: Christmas Island, **H.N. Ridley** s.n., 1904 (SING, lecto, AMES, BM, iso.!).

Specimens seen: Higher parts of island, 1897, **C.W. Andrews** s.n.! (BM, K); Aldrich Hill, c. 274m., 28.6.1963, **A. Pearson** 41! (K), survey track in Tait's Vale, c. 152m., 6.7. 1963, **A. Pearson** 48! (K); Central Plateau, 240-270m.,June 1980, **D.A. Powell** 35! (K); Ross Hill Gardens, c. 115m., July 1980, **D.A. Powell** s.n.! (living material, K); southern central area, c. 198m., 15.11.1980, **D.A. Powell** 235! (seed only K).

Distribution: Christmas Island: fairly common on the plateau and high terraces, but absent from the shore terrace, sections of cliffs and limestone scree slopes. Favours areas of weathered volcanic soil, often in association with the terrestrial fern *Bolbitis heteroclita* (Presl.) Ching. Also tropical Asia from India to Samoa.

4. *Dendrobium crumenatum* **Sw.** in Schrad., Journ. Bot. 2:237 (1799).

Type: 'Habitat in India orientali Java' (S, holo.).

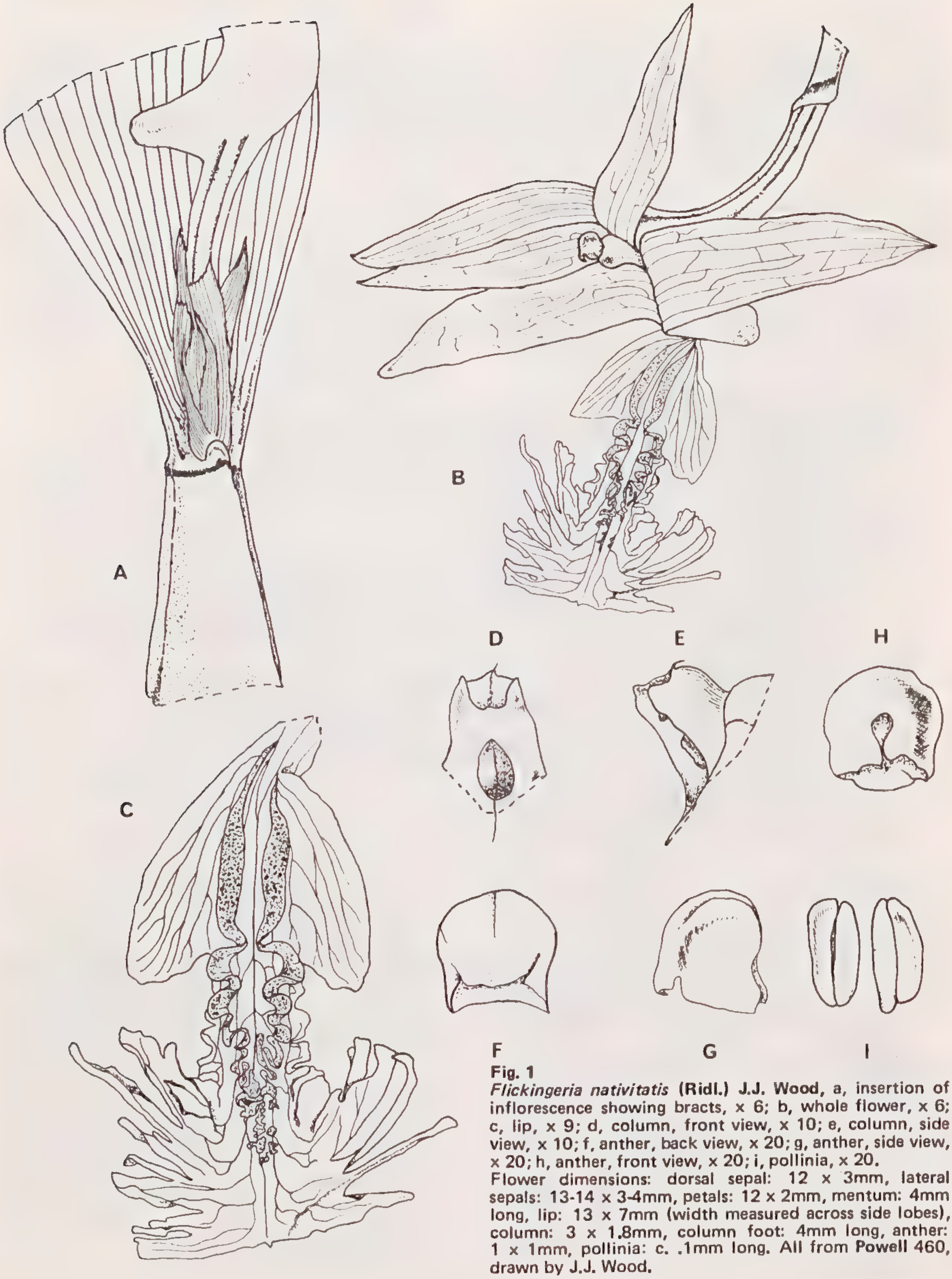


Fig. 1
Flickingeria nativitatis **(Ridl.) J.J. Wood,** a, insertion of inflorescence showing bracts, x 6; b, whole flower, x 6; c, lip, x 9; d, column, front view, x 10; e, column, side view, x 10; f, anther, back view, x 20; g, anther, side view, x 20; h, anther, front view, x 20; i, pollinia, x 20.
Flower dimensions: dorsal sepal: 12 x 3mm, lateral sepals: 13-14 x 3-4mm, petals: 12 x 2mm, mentum: 4mm long, lip: 13 x 7mm (width measured across side lobes), column: 3 x 1.8mm, column foot: 4mm long, anther: 1 x 1mm, pollinia: c. .1mm long. All from Powell 460, drawn by J.J. Wood.

Specimens seen: Locality unknown, Dec. 1897, **C.W. Andrews** 110! (BM, K); first terrace immediately below Drumsite, 152m., 14.7.1968, **D.A. Powell** 77! (K).

Distribution: Christmas Island: extremely common and often growing in an exposed position in the canopy. Also China and India to the Philippines.

5. *Flickingeria nativitatis* **(Ridl.) J.J. Wood** *comb. nov.*
Dendrobium nativitatis **Ridl.** in Journ. Straits Branch Roy. As. Soc., 48:107 (1907).
Dendrobium macraei **Rendle** in Andrews, Monograph Christmas Island, 190 (1900), non Lindl. (1830).
'*Dendrobium section Cadetia* sp.' sec. Ridley in Journ. Straits Branch Roy. As. Soc., 126, 134 (June 1891).
Dendrobium pectinatum **Ridl.** in Journ. Straits Branch Roy. As. Soc., 45:232 (1906), non Finet (1903).

Type: Christmas Island, abundant on trees on Phosphate Hill and the Plateau, October 1904, **H.N. Ridley** s.n. (K, lecto.!, BM, iso.!).
Ephemerantha pectinata **(Ridl.) P.F. Hunt & Summerh.** in Taxon, 10(4):105 (1961).

Specimens seen: Locality unknown, 1897, **C.W. Andrews** s.n.! (BM, K); on *Planchonella nitida*, 17.12.1980, **D.A. Powell** 296! (K); south western slopes of Aldrich Hill, on fallen *Planchonella nitida*, c. 198 m., 16.11.1981, **D.A. Powell** 460! (alcohol material, K).

Distribution: extremely common on the Plateau and high terraces, favouring *Eugenia (Myrtaceae)* and *Planchonella (Sapotaceae)* as host. Endemic.

F. nativitatis belongs to section *Plicatiles* as defined by Seidenfaden (1980). It is related to *F. aureiloba* (J.J. Sm.) J.J. Wood (see new combination below), a species from Sumatra and Java having a three-keeled lip with a golden-yellow mid-lobe.

New Combination.

Flickingeria aureiloba **(J.J. Sm.) J.J. Wood** *comb. nov.*
Dendrobium aureilobum **J.J. Sm.** in Bull. Jard. Bot. Buit., ser. 3, 3:285 (1921).
Ephemerantha aurieloba **(J.J. Sm.) P.F. Hunt & Summerh.** in Taxon, 10:102 (1961).

6. *Eria retusa* **(Bl.) Rchb.f.** in Bonplandia, 5:54 (1857); J.J. Sm., Orch. Java in Fl. Buitenz., 6:406-407 (1905).
Dendrolirium retusum **Bl.**, Bijdr., 351 (1825). **Type:** Java, in altis montis Salak, **Blume** (BOG, holo.).
Phreatia retusa **(Bl.) Lindl.**, Gen. et. Sp. Orch., 64 (1830).
Bryobium pubescens **Lindl.**, Bot. Reg., 24:misc. 145 (1838). **Type:** Java, Feb. 1834, **Bateman** (K, lecto.!).
Eria pusilla **Teijsm. & Binnend.**, Nat. Tijdschr. Ned. Ind., 24:8 (1862). **Type:** Java, habit. in sylvis mont. Pantjar prope Bogor (BOG, holo.).
Phreatia congesta **Rolfe** in Journ. Linn. Soc., 25:358 (1890). **Type:** Christmas Island, Sept.-Oct. 1887, **J.J. Lister** s.n. (K, holo.!).
Pinalia retusa **(Bl.) O. Kuntze**, Rev. Gen. Pl., 2:679 (1891).

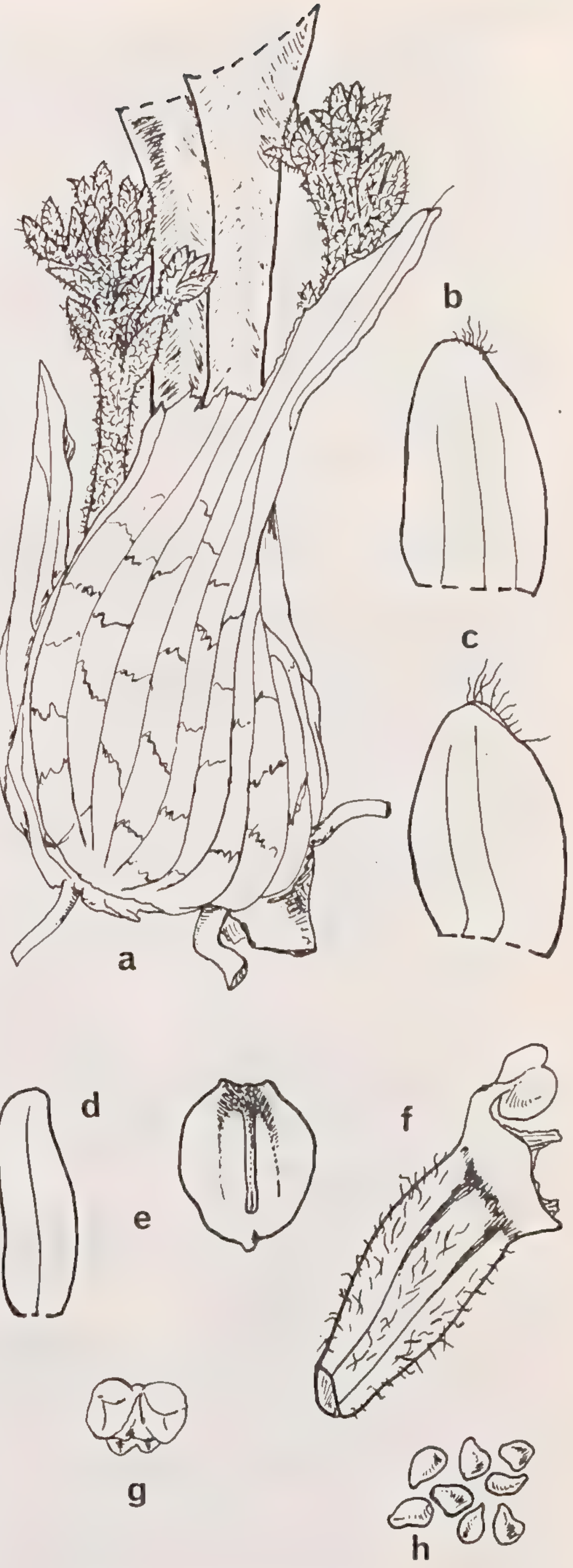


Fig. 2
Eria retusa **(Bl.) Rchb.f.**, a, pseudobulb, leaf bases and inflorescences, x 5; b, dorsal sepal, x 21; c, lateral sepal, x 21; d, petal, x 21; e, lip, x 21; f, ovary, column and anther, x 21; g, anther, x 21; h, pollinia, x 21.
Flower dimensions: dorsal sepal: 1.8 x 0.9mm, lateral sepals: 1.9 x 0.9mm, petals: c. 0.7 x 0.3mm, lip: 1 x c. 0.8mm, ovary and column: c. 2.5mm long. All from **Powell** 495, drawn by J.J. Wood.

Specimens seen: Central limestone ridge, northerly aspect, c. 235m., 15.7.1980, **D.A. Powell** 145! (K); central area, on *Planchonella nitida* in primary rain forest, c. 213m., 28.7.1980, **D.A. Powell** 154! (K); central area, on *Eugenia gigantea* in primary rain forest, c. 228m., 17.12.1980, **D.A. Powell** 298! (K), Limestone Hill, c. 290m., 28.11.1981, **D.A. Powell** 495! (K).

Distribution: quite common, often growing with *Phreatia listeri*. Also Java.

7. *Thelasis capitata* **Bl.**, Bijdr., 386 (1825).

Type: 'in truncis montium Salak, Pantjar, etc.' (BOG, holo.).

'T. ? elongata' **Ridley** in Journ. Straits Branch Roy. As. Soc., 45:234 (1906), non. Bl. (1856).

Specimens seen: 1 mile S. of Drumsite, c. 221m., 17.12.1980, **D.A. Powell** 297! (K).

Distribution: Only seen on the Plateau and on Murray Hill and favouring trees with a dense, high canopy. Also Sumatra and Java.

8. *Phreatia listeri* **Rolfe.** in Journ. Linn. Soc., 25:358 (1890).

Type: Christmas Island, Sept.-Oct. 1887, **J.J. Lister** s.n. (K, holo.!).

Specimens seen: Locality unknown, 1897, **C.W. Andrews** s.n.! (BM, K); southern slopes of central limestone ridge, 182 m., 5.4.1980, **D.A. Powell** 5! (K); central limestone ridge, northerly aspect c. 235m., 23.6.1980, **D.A. Powell** 140! (K).

Distribution: Common on the Plateau and high terraces where the canopy is dense, but absent from the lower terraces where timber is sparse. Growing on emergent *Planchonella nitida* and wind-shorn *Eugenia gigantea*. Endemic.

9. *Thrixspermum carinatifolium* **(Ridl.) Schltr.** in Orchis 5:56 (1911).

Type: Christmas Island, **H.N. Ridley** s.n. (?SING, holo.).

Sarchochilus carinatifolius **Ridl.** in Journ. Straits Branch Roy. As. Soc., 136 (1891).

Dendrocolla carinatifolia **(Ridl.) Ridl.** in Journ. Linn. Soc., 32:382 (1896).

Thrixspermum batuense **J.J. Sm.** in Bull. Dep. Ag. Ind. Neerl., 22:47 (1909). **Type:** Indonesia: Pulau Pulau Batu Is. ('Batoe Is.'), Tanah nana, **H. Raap** s.n. (BOG, holo.).

T. batuense **J.J. Sm.** var. *javanicum* **J.J. Sm.** in Bull. Jard. Bot. Buit., Ser. 2, 26:91 (1918). **Type:** Java, sud Priangan, Rawah Apoe near Kali Poetjang, 10m., **C.A. Backer** 4475 (BO, holo.), *syn. nov.*

Specimens seen: Locality unknown, 1897, **C.W. Andrews** 143! (BM, K); central area, on *Eugenia* in primary forest, c. 221m., 23.6.1980, **D.A. Powell** 141! (K); also observed at Limestone Hill, South Point, 28.11.1981 by Powell.

Distribution: Occurring mainly on the Plateau growing high in the main forest canopy usually amongst the branches of *Eugenia* or *Planchonella*. Also Pulau Pulau Batu Islands and Java.

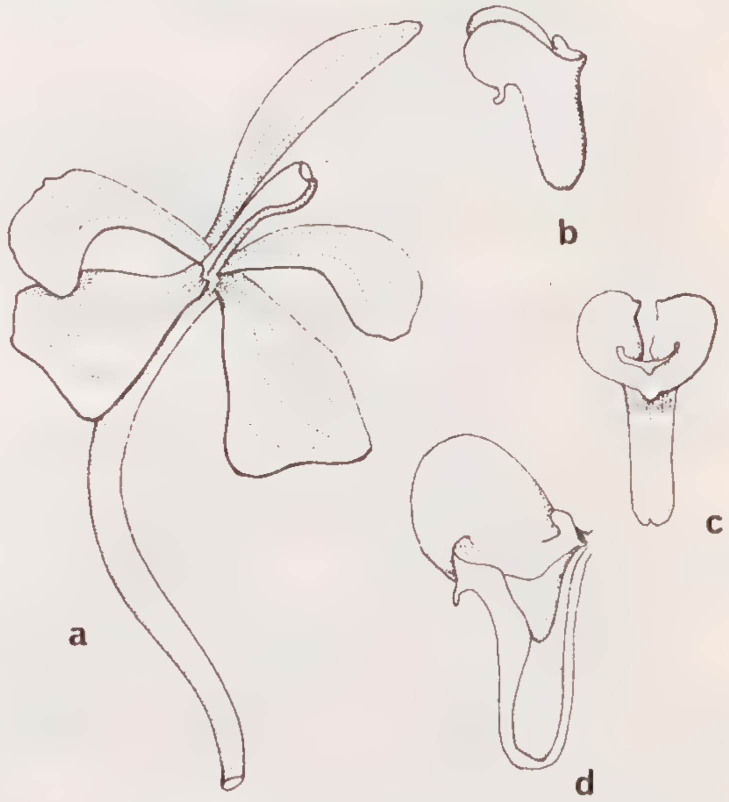
10. *Brachypeza archytas* **(Ridl.) Garay** in Bot. Mus. Lflts. Harv. Univ., 23, 4:164 (1972).

Type: Christmas Island, **H.N. Ridley** s.n., 1890 (K, lecto.!).

Saccolabium archytas **Ridl.** in Journ. Straits Branch Roy. As. Soc., 23:137 (1891).

'Doritis sp. n. ?' sec. Rolfe in Hemsley in Journ. Linn. Soc., 25:359 (1890).

Fig. 3
Brachypeza archytas **(Ridl.) Garay**, a, flower with lip removed, x 2½; b. lip, side view, x 2¼; c. lip, front view, x 3; d. lip, longitudinal section, x 4½.
Flower dimensions: dorsal sepal: 8 x 2.5mm, lateral sepals: 6 x 4mm, petals: 5 x 2mm, lip: 5mm long. All from Ridley s.n. (Type), drawn by J.J. Wood after an unpublished herbarium sketch by L.A. Garay.



Specimens seen: Ridge N. of Flying Fish Cove, 1.10.1887, **J.J. Lister** s.n.! (K); highest part of hill above Flying Fish Cove, 4.10.1887, **J.J. Lister** s.n.! (K); on trees everywhere, 1897, **C.W. Andrews** 144! (BM, K); first terrace immediately below Drumsite, 152m., 27.6.1968, **D.A. Powell** 53! (K); central area, on trunk of *Tristiropsis nativitatis* (Sapindaceae) in primary rain forest, 213m., 23.6.1980, **D.A. Powell** 142! (living material, K).

Distribution: Fairly common on all of the terraces, growing on the trunks of several trees, often only ten to fifteen feet above the ground. Endemic. Depicted as *Saccolabium archytas* on the 9 cent Christmas Island stamp.

References:

Andrews, C.W., A Monograph of Christmas Island (1900).
Ridley, H.N., A Day at Christmas Island, in Journ. Straits Branch Roy. As. Soc. no. 23:123-139 (June 1891).
Ridley, H.N., An Expedition to Christmas Island, in Journ. Straits Branch Roy. As. Soc. n. 45:137-271 (June 1906).
Ridley, H.N., Christmas Island Flora — additional notes, in Journ. Straits Branch Roy. As. Soc., 48:107-108 (1907).
Rolfe, R.A. in Hemsley, W.B. in Journ. Linn. Soc., 25:351-362 (1890).

Seidenfaden, G. in Dansk Bot. Arkiv, 34, 1:9-67 (1980).

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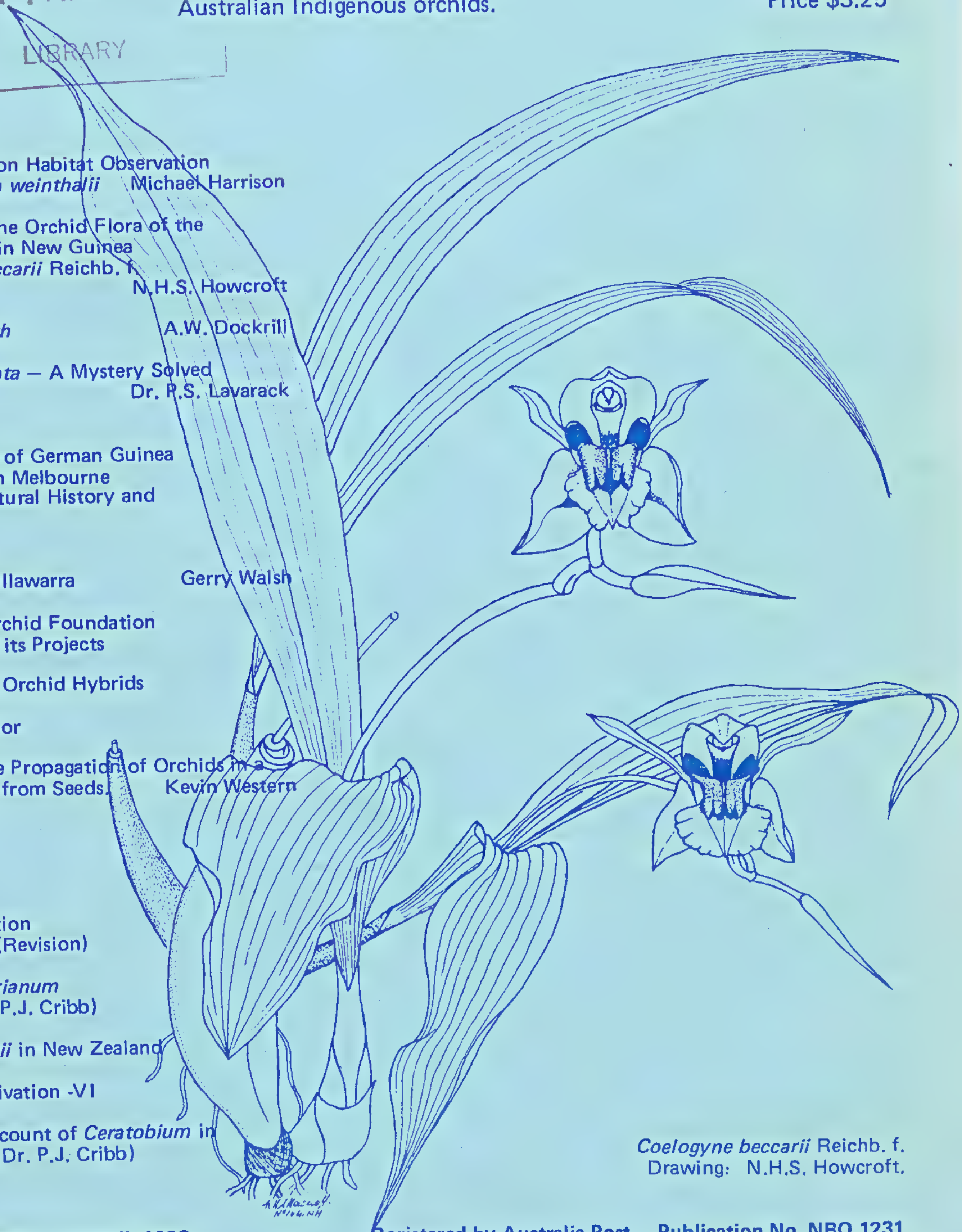

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EDITORIAL

The first week in March, in Sydney, was crammed with good things - all of them unusual.

On Tuesday, March 1, there was a function at the Sydney Botanic Gardens to launch the AOF's publication of the long awaited, English translation of Schlechter's "The Orchidaceae of German New Guinea". This was a justifiably festive event attended by botanists, members of the AOF and other luminaries of the orchid world. Dr Laurie Johnston, Director of the Royal Botanic Gardens briefly outlined the history and importance of this AOF project and Mr Gerald McCraith, President of the AOF, spoke briefly on the problems experienced. Appreciation of the heavy editorial tasks performed by Messrs Don Blaxell and Jim Simmons was tangibly expressed by presenting each of them with a leather bound copy of the book. Altogether this was a very pleasant function affording an opportunity for meeting enthusiasts from far and wide.

Among the guests was Dr P.S. Lavarack who, on the following evening (2 March) gave an excellent lecture (well illustrated with slides) to a large combined meeting of ANOS members and those of the North Shore Orchid Society, at Chatswood. Bill Lavarack brought to us the experience and discoveries of his various expeditions to the wilderness areas of Cape York Peninsula. The well selected slide presentation was ideally suited for such a mixed audience. It came from the "horse's mouth" so to speak and traversed briefly the practical problems as well as the most significant discoveries, the terrain and the habitats.

Two evenings later (4 March) Professor Ralph Holman of the University of Minnesota U.S.A. gave a lecture, at the Sydney Botanic Gardens, on "Fragrance and Odours in the Lives and Identities of Orchids". This was an excellent exposition of a rare field of study involving specially devised methods of analysis using gas chromatography and mass spectrometry with a computerised method of relating odour patterns. It was something well out-of-the-ordinary for the usual orchid "buffs" and it stimulated some penetrating discussion from the biochemists present. I felt we were given a glimpse of a new frontier in orchidology. Clearly we orchid enthusiasts need never become jaded. There seems no limit to the variety of interests open to us.

On rare occasions I have invited attention to particularly good monthly bulletins published by ANOS Groups. It is now time to notice *The Orchidophile,* bulletin of the ANOS Sydney Group. Its new editor, Gerry Walsh, has elevated this journal remarkably within a few short months - not only by his editorial skill but also by his natural ability as author of some stimulating, refreshing and critical articles. *The Orchidophile* is worthy of consideration by distant subscribers.

WANTED

1 plant of *Dendrobium moorei*
1 plant of *Sarcochilus australis*
1 plant of *Dendrobium cunninghamii*

Will swap or buy - please send details to:
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COLOUR FUND

Council has opened an Interest Bearing Trust Account for donations received from members which now stands at $1,136.73.

We wish to thank all who have made donations especially David Cannon who made a donation of seedlings which raised over $400.00 for the Fund.

It must be understood that at the present time it costs approximately $1500.00 for four pages of colour, so it will be some time in the future before we can regularly have colour in *The Orchadian.*

N. Hilliger, President, ANOS

CULTIVATION BASED ON HABITAT OBSERVATION — V *Bulbophyllum weinthalii*

NATIONAL HERBARIUM OF VICTORIA
21 APR 1983
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by Michael Harrison

Every time I walk into the orchid house and see an orchid in flower I realise why we grow orchids. Certainly, it is satisfying to watch new shoots develop and mature into plump, fresh, pseudobulbs or observe the tiny root tips as they slowly emerge and make their way down into the compost but, in the final analysis, the flowers are the crowning glory. And what can be more exciting than waiting for a previously unflowered seedling to open its segments to the world for the first time? For in most cases it has taken several years of careful nurturing to arrive at this point. The investment in time and energy is considerable.

And yet, in nature, this process is a matter of course. It happens naturally with no human intervention or observation and on such a grand and diverse scale that it is difficult to comprehend. Each species must reproduce to survive and each individual must strive to proliferate its kind. Some species are rare while others are common but all have the same goal: to produce viable seed and distribute it where it will have the best chance to germinate and grow and, ultimately, to repeat the process.

While many orchids are fairly cosmopolitan in their requirements, some have adapted themselves to be dependent upon a particular host. *Dendrobium falcorostrum* is quite reliant upon the Antarctic Beech (*Nothofagus moorei*) and only rarely is it seen on any other tree. *Bulbophyllum weinthalii* also falls into this category, its sole host being the Hoop Pine (*Araucaria cunninghamiana*). Both of these orchids are, however, quite prolific upon their specific hosts and individual trees often support many hundreds of plants. Walk into virtually any Beech forest (there are not too many left) and you will see *D. falcorostrum*. It is there because the Beech trees are there; specifically: because its seed germinates and grows so readily on the bark of the Beech and so poorly on anything else. *B. weinthalii* is the same. It grows only in the upper branches of the Hoop Pine although its seed must often drift across on to other trees. It is incapable of growing successfully elsewhere. I do not know whether germination even takes place on other hosts but somewhere along the line something goes wrong. Perhaps it is the micro-environment created by the deeply furrowed, moss encrusted bark of the Hoop Pine which accounts for its eminent suitability as far as *B. weinthalii* is concerned. Or it may be some intrinsic chemical factor within the bark or even perhaps within one of the attendant mosses or lichens which causes this orchid to forsake all other potential hosts and limit itself to this particular tree. There is no doubt that the bark of the Hoop Pine makes an excellent host for epiphytic orchids and many others also colonise it. One of these in particular, *B. elisae*, makes for an interesting comparison with *B. weinthalii*.

Although not nearly as prolific as *B. weinthalii, B. elisae* grows well on Hoop Pine, often forming quite large clumps with succulent pseudobulbs and extensive spreading root systems. But, unlike *B. weinthalii, B. elisae* does not limit itself to Hoop Pine, growing just as happily on many other hosts and under varying environmental conditions. As well as occurring on several other trees within the highland forests alongside Hoop Pines in northern New South Wales and southern Queensland, it also occurs much further south, extending as far as the Blue Mountains National Park where it is infrequently seen in pockets of rainforest. It commonly occurs in dry rainforest areas (so-called "dry scrub") well away from the coast where again it grows on a variety of host trees. It also occasionally grows on rocks, sometimes in quite exposed positions.

So here we have two orchids sharing a habitat, the Hoop Pine. One of these, *B. weinthalii*, occurs exclusively on that host, whilst the other, *B. elisae,* grows on a variety of hosts. This demonstrates two quite different approaches to the question of survival. *B. weinthalii* has pinned all its hopes on the Hoop Pine and within its habitat it is quite prolific. But, without its specific host this orchid would cease to exist. *B. elisae,* on the other hand, has opted for adaptability but in doing so has paid a price. Nowhere have I seen *B. elisae* in significant numbers and although it could by no means be considered as rare it is not really a common orchid; its distribution could be considered as widespread but sporadic and, occasionally, it may be locally common. In the long term who could say which approach best assures survival? Ostensibly, the non-specific, adaptable approach would appear attractive but under certain circumstances there may be problems. Any climatic change, even slight, could play havoc with the germination rate of any species with a sporadic distribution, suggesting, as it does, a less than ideal rate of germination and/or survival to maturity at the best of times. So perhaps *B. weinthalii* made the best choice after all. Within its habitat, its germination/survival rate is excellent, and a fairly distinct climatic disruption would be required to upset this orchid, for as long as the Hoop Pines survive, so too will *B. weinthalii.*

The Hoop Pine, in nature, is a rainforest tree and, in years gone by, it was extensively logged for its fine, durable timber. It extends from virtually sea-level to about 1350 metres on the ranges, but appears to reach its best development in the subtropical and warm temperate rainforests between 750 metres and 1100 metres. It is a beautiful and stately tree with a tall, unbranched bole and a fairly regular arrangement of the lateral branches. It often appears as an emergent tree, especially in poorer quality rainforest areas and, apart from its symmetrical form, is instantly recognisable by the "dish-mop" appearance of the foliage on the outer branches, particularly on mature specimens.

One of the most satisfying and relaxing experiences one can enjoy is to spend a few hours in these forests, just wandering along the tracks, soaking up the atmosphere. Strong light is excluded from the lower reaches due to the heavy canopy overhead and the air is humid and sweet smelling, with just a hint of decay, due to the permanent and on-going composting of the leaf litter on the forest floor. Should the clouds descend, as they often do, then the atmosphere will become decidedly damp, as the forest is rapidly transformed into a misty wonderworld of towering trees which gradually fade from sight as the fog closes around them. The cool stillness is absolute, the only sound being the constant dripping of water from the leaves.

These forests are the home of many orchids but *B. weinthalii* is surely one of the most interesting. Although it shares its home on the upper branches and trunk of the Hoop Pine with several other orchids, by sheer weight of numbers it really is the dominant one within its domain. The flowers are relatively large for the genus, usually about 20mm across, and the segments are a greenish white in colour irregularly blotched with red or purple, sometimes quite heavily. On average, the pseudobulbs are about 15mm tall and are covered with a persistent white, fibrous sheathing which slowly disintegrates as the bulbs age. Once the pseudobulbs have lost this sheathing they often darken to a purplish colour from exposure to fairly high levels of light, positioned as they invariably are, 15 to 30 metres above the ground, and level with, if not a little above, the canopy. The roots are typical for the genus, tending to form a fine, branching network but extending only about 10-15 centimetres. They are, however, produced prolifically from the base of the developing pseudobulb and adjacent rhizome, and quickly attach themselves to the host, easily penetrating the mosses and lichens and finding their way into the folds and crevices of the underlying bark. In this situation, the roots never dry out completely, surrounded as they are by this moisture retentive layer which acts like a sponge, soaking up and holding water from the frequent fogs and heavy dews, and then slowly releasing it to the atmosphere. Constantly high levels of humidity are a feature of this environment, and it is this factor, coupled with the cold night-time temperatures generally experienced at these altitudes, which produces the heavy dews almost daily throughout the year. Apart from the dews and fogs, considerable moisture is also provided in the form of direct rainfall, as the mountains force the incoming clouds to rise, expelling their life-giving water.

Simulating the Habitat

B. weinthalii is not a particularly easy orchid to grow in cultivation and requires a fairly controlled environment to do well. A cool, airy atmosphere with high humidity is required, along with good levels of light (a 70% shade factor suits this orchid). This combination is, in many areas, difficult to achieve without the use of specialised cooling equipment. Many growers tend to increase shade levels on or over the orchid house as a means of reducing heat during the summer months, but this may result in light levels which are less than optimum for many orchids. A compromise must be reached whereby some shade is added but not an excessive amount. My preference is for a summertime increase of 30% over normal levels, although at times 50% may be indicated. This extra shade is generally required only during the period November to March. The position of the orchid house becomes an important factor when trying to achieve such an environment, as does the position of the plant within the orchid house. Ideally, the house should be situated in a well-lighted and fairly open position but with protection from the west and south. Solid protection, such as glass or fibreglass is usually best but, as always, so much depends on specific situations. Most orchid houses can be partitioned to a certain extent to create differing micro-environments and it is the manipulation and management of these areas which, to a large extent, determines the degree of success one will enjoy. Growers usually segregate their plants into groups accordingly, to their requirements regarding light, water, temperature, etc. often unconsciously altering the conditions slightly in one part of the orchid house to suit a certain group of orchids. If, for example, a grower increases the level of shade over the southern end of his house, where it is probably slightly cooler than elsewhere, and also commences to water a little more often in this section, then a completely new environment has been created. The installation of a misting system over, say half of this new area gives rise to a further micro-environment which, again, can be exploited to the benefit of some groups of orchids. There are many different adjustments and modifications one can make in the orchid house, most of which are easy to install and relatively inexpensive. The range of environments one is able to create is limited only by imagination and, often, only a slight alteration is required to just one environmental factor to effect a noticeable change in the condition of those orchids subject to that alteration. Merely hanging some orchids low down under the benches, and others up near the roof, shows some appreciation of their respective requirements; and this needs only to be expanded into a more definite and workable management policy.

Once an effective range of micro-environments has been established, then the placement of newly introduced orchids becomes the main consideration. At times it may be difficult to anticipate the range of conditions which will best suit a particular orchid, especially if the grower is not familiar with its natural environment, and plants are often placed in positions to which they are ill-suited. This does not necessarily mean that they will perish and many an orchid has done surprisingly well under seemingly adverse conditions. I often think that the difference between the so-called "easy" and "hard" orchids is their ability to adapt to conditions which are less than ideal. Those which have no tolerance of conditions outside their normal range, which may be quite limited, succumb quickly unless their new environment closely approximates natural conditions, whilst those more adaptable species are able to accept their new home and begin to re-establish themselves. There are, of course varying degrees between absolute failure and success, with some plants staggering on for years without ever looking secure, and others recovering reasonably well but never really growing strongly. I have often heard growers saying that they have had such-and-such orchid for years and that it has never grown well and seldom or never flowered. And then, suddenly, they say, they moved the orchid into a different position or into another section of their orchid house and, bingo! Away it went, sending out a multitude of new growths and flowering beautifully. These stories are common, and yet they indicate a certain degree of cultural laziness, for an orchid should never be just left in a position where it is obviously performing poorly. If, after a reasonable period of time, it becomes apparent that a particular plant is unhappy, then move it; try it somewhere else. Experiment with a little more or a little less water and/or light. Face it in a different direction. Position it higher or lower than it was previously. Move it from glasshouse to shadehouse or vice versa. If it is in a pot, then repot it, using a different medium or, if it is on a slab, try another one. You may find that none of these things make the slightest difference but at least you tried.

B. weinthalii has a definite preference for damp conditions and prefers not to dry out completely, although at times this does occur without apparent ill-effects. Of the plants in my collection, the best are definitely those still growing on pieces of Hoop Pine, and which I have had for about four and a half years. These lengths of Hoop Pine are still in fairly good condition, although I have no doubt that they will begin to show signs of deterioration at some time in the not-too-distant future. I expect that borers will eventually destroy the heartwood, leaving only the outer layers and bark, and that at that stage I shall attempt to insert a fresh length of timber, probably paperbark or, perhaps, a piece of hardwood, into the vacant cavity. The only problem may be that as the borers eat out the heartwood, the bark layers will disintegrate rather than holding together in a cylinder. But only time will tell.

I have had reasonable success using tree-fern fibre as a host for *B. weinthalii* and the first plant I ever obtained, in 1968, is still on its original piece of tree-fern. It grows well but never flowers. Other plants I have established on tree-fern have also grown fairly well over the years but they generally do not flower as well as I would like. At times the roots seem unwilling to enter the fibre, ceasing to grow once the root tips come into contact with it. I have always assumed that the acidic nature of tree-fern fibre is responsible for this but I am not really sure. Some growers prefer to soak tree-fern fibre slabs in lime water for a few days before using it but again I am uncertain about the merits of this treatment. For moisture-loving orchids, such as many of the *Bulbophyllum* species, tree-fern fibre slabs serve well, the obvious advantage being their ability to hold moisture for an extended period of time, compared to most other artificial hosts. Cork, both pressed and natural, also makes a good host but tends to dry out too quickly, especially in warmer weather, unless the grower is able to water two or three times a day. An interesting method of partly overcoming this problem is to place a piece of blotting paper between the plant and the cork when tying the plant in position. The blotting paper holds water and gives the plant just that little bit extra during its establishment period. But, even so, *B. weinthalii* still prefers permanently damp conditions which cork may not be able to provide in the long term. The roots of *B. weinthalii* have no trouble in attaching themselves to cork slabs and, if watering can be kept up, cork may prove to be more successful for some growers than tree-fern fibre. I have also tried both coconut husk and staghorn peat but, in both cases, the roots were completely intolerant of contact, much more so than with tree-fern fibre. I have never tried paperbark or ironbark but I suspect the latter would be worth a try.

In closing, I would like to make one final comparison between, *B. weinthalii* and *B. elisae.* Although *B. weinthalii* can be difficult at times, once it has settled down it will usually perform well and give little cause for concern. *B. elisae*, on the other hand, is an orchid which I consider to be one of the most difficult of all our natives to grow well for any length of time. It doesn't actually die; it languishes, producing pseudobulbs which become progressively smaller until it just sits there doing nothing. I have tried many different hosts to no avail, and the best results I have had are with plants left on the original host, although even these are less than satisfying. Heavy watering produces no more encouraging results than does reduced watering and differing levels of light intensity also appear to have no appreciable effect on the inevitable backward slide towards static half-life. I have always considered that any orchid can be grown under cultivation as long as conditions are right and I have not yet given up on *B. elisae*. One day I shall get the right combination of factors but until then I shall continue to experiment.

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February, 1983

CONTRIBUTIONS TO THE ORCHID FLORA OF THE ARAUCARIA FORESTS IN NEW GUINEA — 4 *Coelogyne beccarii* Reichb. f.

By: N.H.S. Howcroft

The New Guinea *Coelogyne* species occur in most forest types from sea level up to altitudes around 2,500 metres. In some areas they may also be found in grasslands growing at the base of grass clumps and shrubs. The *Araucaria* forests provide ideal conditions for *Coelogyne* and at least five species, *C. asperata* Lindl., *C. beccarii* Reichb. f., *C. fragrans* Schltr, *C. truncicola* Schltr, and one unidentified species, have been found occurring together in several stands of *Araucaria* at different localities.

One species, *Coelogyne beccarii,* is frequently encountered in both *Araucaria* and coastal forests. It is wide spread throughout New Guinea (Schlechter (1914), Smith (1909), Van Bodegom (1973), and some of its islands. The species is described here and illustrated in figures 1 and 2.

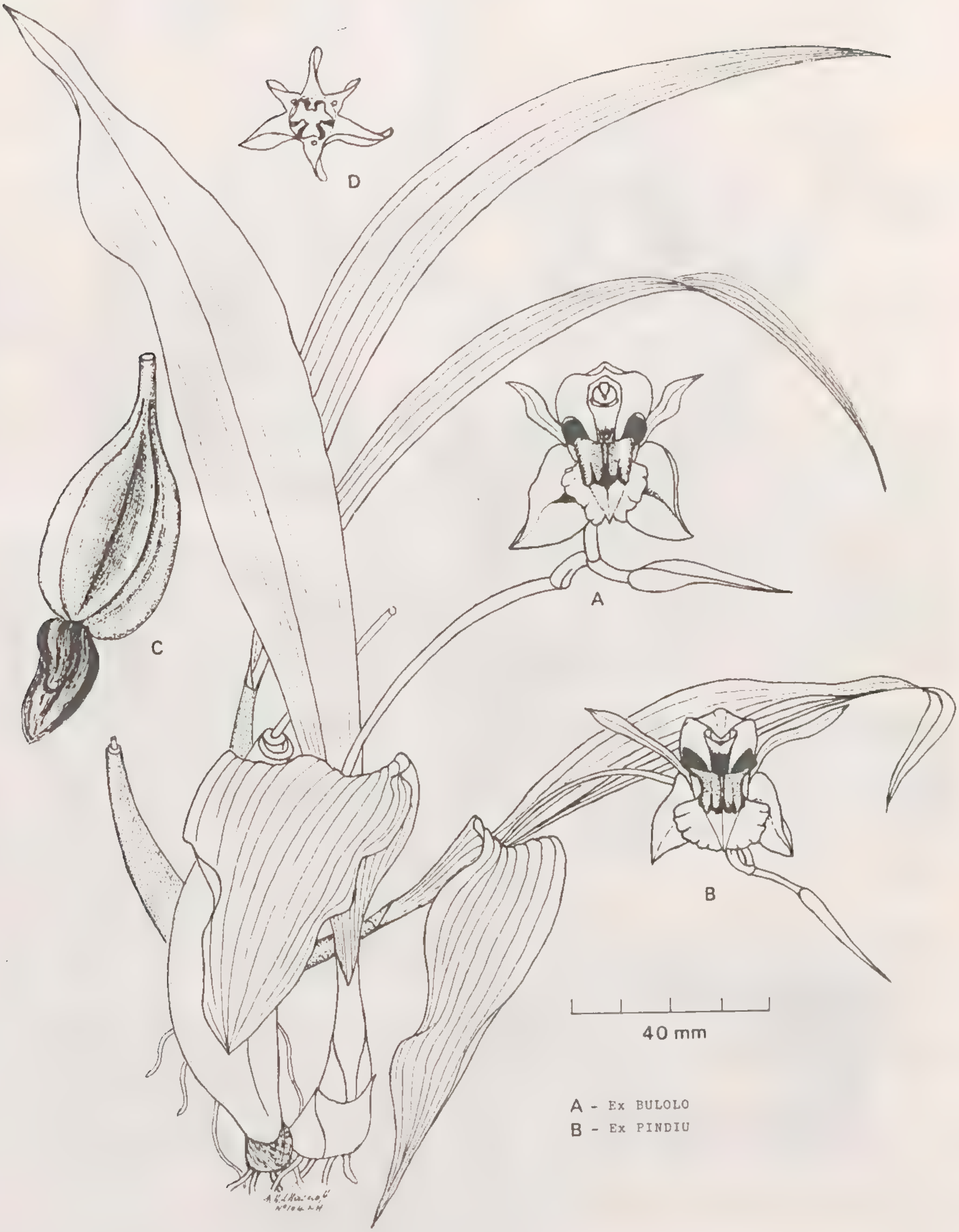
Description: *Coelogyne beccarii* Reichb. f., in Bot. Zentralbl. XXVIII (1886), p. 345. *C. micholitziana* Kranzl., in Gardn. Chron. 1891, V. 11, p. 300. *C. rumphii* Schltr, in K. Schum et Laut., Nachtr. 1905, p. 96. Epiphytic, erect, up to 50 cm tall. Pseudobulbs. 1.5 cm apart, ovate-elongate to pyriform, smooth to sulcate, up to 12 cm tall and 4.2 cm in diameter. *Leaves* sub-erect, two per pseudobulb, developing to maturity after the inflorescence (synanthous), not thick, strongly ribbed on the under surface, lanceolate to oblanceolate, acutely acuminate, margins slightly undulate, up to 38 cm long, 10 cm wide. *Inflorescence* borne at apex of the pseudobulb, erect to sub-erect, slender, peduncle slightly flattened, up to 32 cm long, rhachis up to 5 - 9 cm long. *Flowers* large, 3 to 6, appearing singly, subtended by a deciduous spath-like bract; dorsal sepal white to light green broadly lanceolate, acute, slightly ridged, around 4 cm long, 1.6 cm wide; *lateral sepals* white to light green, broadly lanceolate, slightly unequal sided, acute, slightly ridged, around 3.8 - 4 cm long, 1.5 - 1.6 cm wide; *petals* white to light green, linear, acute, around 4 cm long, 0.3 - 0.4 cm wide, *labellum* with white mid lobe, middle and lateral portion dark brown or orange; lateral lobes erect, oblique, obtuse; slightly evolute, on the inner face veined and dotted with reddish brown; mid lobe elongate, margins linear, slightly revolute, upper surface raised, variable, cartilaginous, glabrous, smooth to rugose, sometimes partly divided with 5 - 7 slightly raised flat topped ridges or with a series of depressions; in the surface apex broadly obcordate, obscurely lobed, often apiculate, margins slightly undulate; *column* slightly curved, narrow at base, apex broad, trilobed, white merging to yellow at apex; anther usually yellow; capsule six-winged.

Distribution: *Coelogyne beccarii* is widespread in New Guinea as indicated on the map (figure 3). It occurs at altitudes from sea level to around 1,600 metres. Its range extends to the Moluccas (Backer et Van Den Brink, 1968). *C. beccarii* is reported to occur on New Britain but on examining herbarium specimens at Lae the author is inclined to believe that this may be another species. This will be discussed further.

Habitat: *C. beccarii* is usually found growing in dense to half shade, low in the crowns of trees or close to the floor of the forest on the tree trunks. In figure 1, specimen A was found growing on the trunk of an *Araucaria cunninghamii* (Hoop pine) at Bulolo. Specimen B in figure 1 was collected from the trunk of an *Araucaria hunsteinii* (Klinkii pine) at Pindiu on the Huon Peninsula. The specimen illustrated in figure 2 was found growing in the centre of the crown of a Mango tree at Modewa village on the coast in the Milne Bay Province. In all cases these specimens were growing in dense shade and in moist conditions. Periodic dry weather occurs in all areas.

Cultivation: The species does best on the trunks of live trees in half shade, or in hanging baskets with large chunks of coconut husk or tree fern fibre. It can be grown reasonably well on tree fern slabs but does not like pot culture.

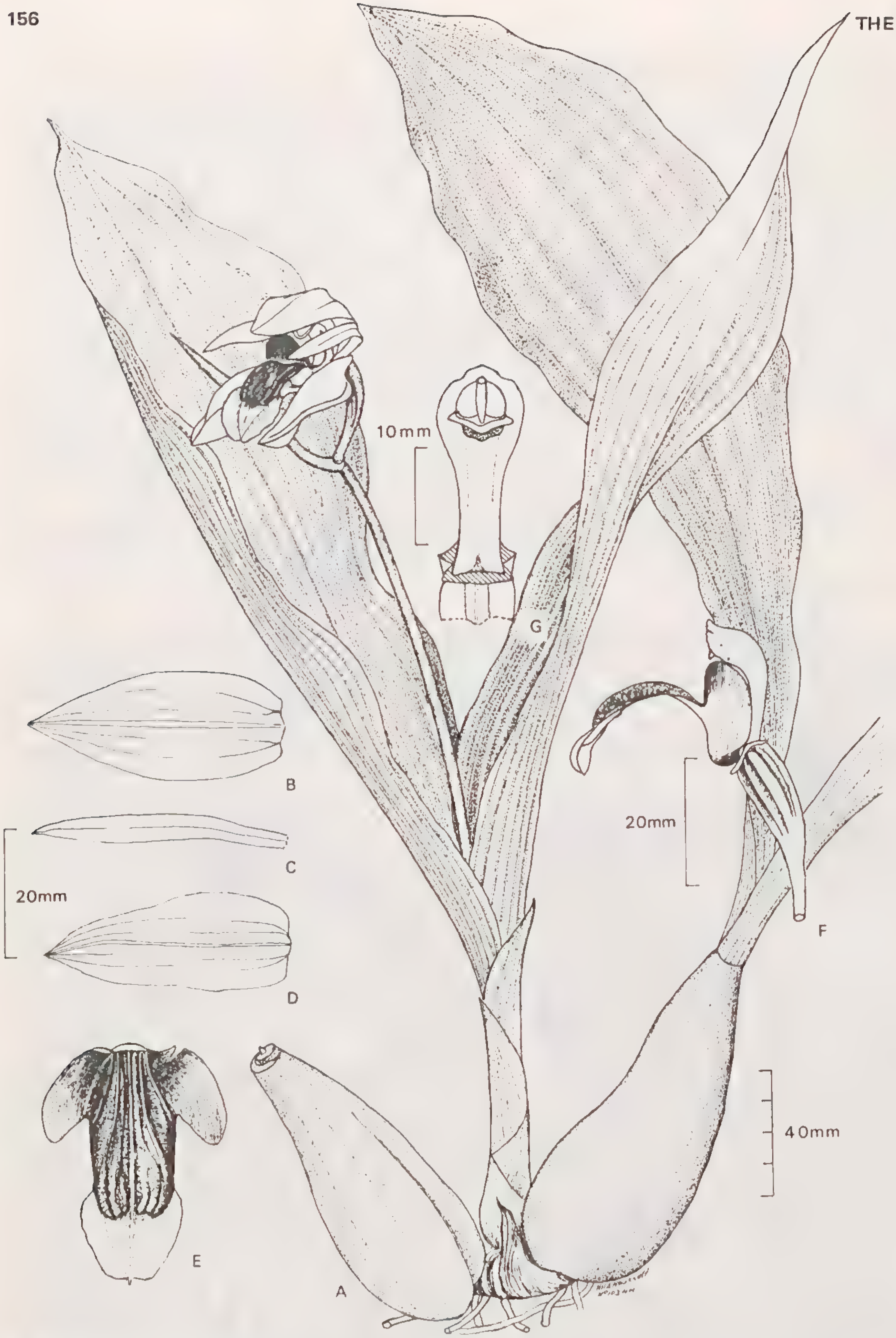
Flowering: Herbarium specimens indicate that the species flowers during February to April, June and November to December. Specimens in the author's garden produced a succession of individual flowers over an eight week period on each of several specimens. Each flower either drops off or produces a pod before the next flower is produced.



Coelogyne beccarii Reichb. f.

Drawing: N.H.S. Howcroft

Figure 1. *C. beccarrii.* A. Specimen from Bulolo, B. Specimen from Pindiu Huon Peninsula, C. fruit, D. Cross-section of fruit. (All specimens from Araucaria forests.)



Coelogyne beccarii Reichb. f.

Drawing: N.H.S. Howcroft

Figure 2. *C. beccarii* ex Modewa Milne Bay Province. A. plant and flower, B. dorsal sepal, C. petal, D. lateral sepal, E. labellum from above, F. side view of column and labellum, G. column from below.

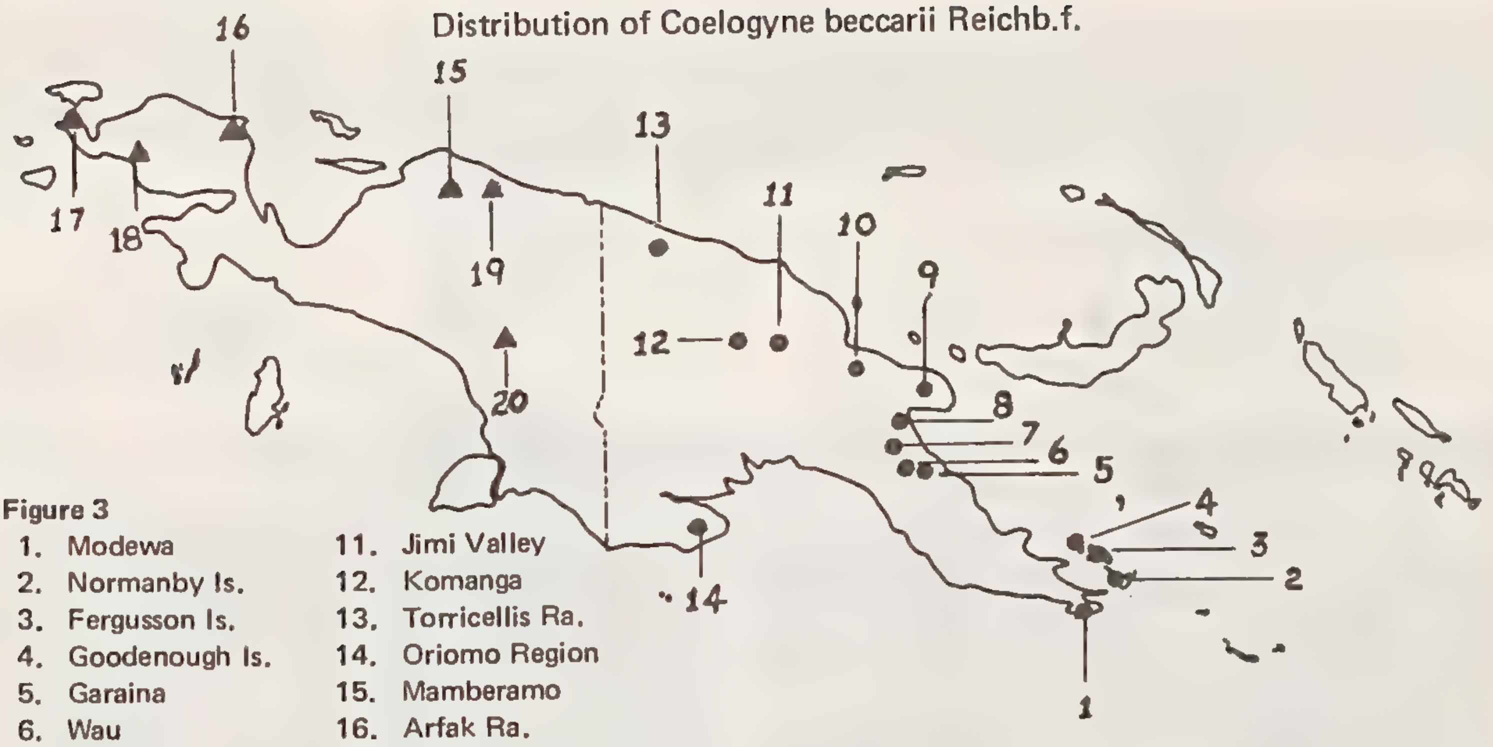

Distribution of Coelogyne beccarii Reichb.f.

Figure 3

1. Modewa
2. Normanby Is.
3. Fergusson Is.
4. Goodenough Is.
5. Garaina
6. Wau
7. Bulolo
8. Lae Region
9. Pindiu
10. Finisterre Ra.
11. Jimi Valley
12. Komanga
13. Torricellis Ra.
14. Oriomo Region
15. Mamberamo
16. Arfak Ra.
17. Sorong and Batanta Is.
18. Temina Boean
19. Tor River
20. Lorentz River.

Discussion: The Lae Herbarium specimens from New Britain are bifoliate, like *C. beccarii,* but the rhachis of these specimens is much longer, at least twice as long, bearing many more single flowers in succession. *C. beccarii* bears up to 6 flowers on its inflorescence before it ceases flowering, whilst the New Britain specimens bear twice that number or more. Bougainville Island has been cited also as having *C. beccarii* (Pers comm. Mr H. Slade 1981). However the author has collected a *Coelogyne* species from the particular locality mentioned by Mr Slade and has identified this as *C. macdonaldii* F. Muell. et Kranzl., a species closely related to *C. beccarii* but differing in parts of the labellum and, like the New Britain species, bearing at least 15 flowers in succession. This species is likely to be the same as that reported by Mr Slade. Further examination of the New Britain and Bougainville material may show these to be conspecific. These in turn should also be compared with Schlechter's *C. beccarii* Reichb. f. var. *tropidophora* which he described as differing from the typical form by having 7 - 9 keels, a description which brings it close to the Bougainville species. The Bougainville species will be described in another paper.

Schlechter (1914) placed *C. beccarii* in the same Section and subsection *(Succedanae - Speciosae)* as *C. fragrans* Schltr. However, *C. fragrans* bears all its open flowers at the one time whilst *C. beccarii* bears its flowers singly and in succession. This feature alone clearly separates *C. beccarii* and its New Britain and Bougainville allies from *C. fragrans* and suggests that either *C. fragrans* or the others should be placed in another section or subsection.

Other New Guinea species with the flowering characteristics of *C. fragrans* are *C. truncicola* Schltr (Sect. *Simultaneae* - subsect. *Lentigonoseae), C. carinata* Rolfe and one other unidentified species, similar to *C. fragrans* but smaller. *C. truncicola* and *C. carinata* are considered to be possibly conspecific (Reeve 1982). This is supported, to a degree, by the description of the Type material and a range of pressed specimens at Lae Herbarium but needs further investigation.

Another characteristic, thought to separate *C. beccarii* from *C. fragrans,* is the former's bifoliate habit and the latter's unifoliate habit. As a rule, live sterile specimens can be successfully distinguished from each other by the number of leaves. The other two species are also bifoliate but are smaller in habit and appear to differ in the shape of their pseudobulbs. Reeve (1982), in commenting on two articles published in the March and June 1982 issues of **The Orchadian** by Mr V.A. Chadim on New Guinea *Coelogyne,* mentions the occurrence of *C. fragrans* with bifoliate pseudobulbs. If this proves to be correct then the bifoliate characteristic cannot be used with as much confidence as before to distinguish *C. beccarii* from *C. fragrans.*

Achnowledgements: The author thanks Mr M. Galore, Assistant Director of the Lae Herbarium and National Botanic Gardens for his assistance in the reproductions of the author's illustrations contained herein. Dr Franz Arentz, Forest Pathologist, Bulolo is also thanked for his kind assistance in reading the draft and for his useful suggestions.

REFERENCES:

Backer, C.A. and R.C. Bakhuizen van den Brink, Jr: (1968) *Flora of Java III.*

Bodegon van J. (1973) *Enige Orchideen Van West Nieuw Guinea.* Technische Hogeschool Twente.

Chadim, V.A. (1982) **The Orchadian** 7 (3): 60-62

Chadim, V.A. (1982) **The Orchadian** 7 (4): 84-85

Pfitzer E., F. Kranzlin (1907) *Das Pflanzenreich* 32, Fig. 8 A.E.

Reeve, T. (1982) *The Orchadian*

Reeve, T. (1982) **The Orchadian** *7 (5): 106*

Reeve, T. (1982) **The Orchadian** 7 (5): 106

Reichenbach, H.G. (1886) *Botanisches Zentralblatt XXVII,* 345

Schlechter, R. (1914) *Die Orchidaceen von Deutsch - Neu - Guinea* p XXXIII, 101-105, Fig. Atlas. plates XXXIX-XXXXI.

Smith, J.J. (1909) *Nova Guinea VIII,* 136, tXLV, 151.

Smith, J.J. (1909) *Nova Guinea VIII,* 527.

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January, 1983,

In 1967, Dockrill transferred the species **Sarcochilus weinthalii** *F.M. Bail. to a new genus* **Parasarcochilus** *Dockr. In 1972 Garay referred the species back to the genus* **Sarcochilus.** *Living in northern Queensland where the species does not occur, Dockrill did not have fresh material for careful study between 1972 and 1982. In September 1982, on a visit to Brisbane, he obtained a number of flowering clones from R. Crane and W. Mitchell. The flowers of these clones were then studied and the resultant findings by the author are presented in the following paper.*

WEINTHAL'S SARCANTH

By A.W. Dockrill

Summary: It is proposed that, until the broad limits of the genus *Pteroceras* are fully understood, the species *Sarcochilus weinthalii* F.M. Bail. be known as *Parasarcochilus weinthalii* (F.M. Bail.) Dockr.

There has been considerable controversy over the nomenclature of this species which was originally described by F.M. Bailey as *Sarcochilus weinthalii* (Qld. Agric. J. 13 (1903) 346), placed in a new genus, *Parasarcohilus,* by the present author (Aust. Sarcanth. 1967) 23, pl. 9) and returned to *Sarcochilus* by Garay (Bot. Mus. Leafl. Harv. Univ. 23^4 (June 1972) 192).

The *Sarcanthinae* orchids are primarily separated generically on the number and structure of the pollinia, these being 4, each completely free from the others, and readily recognised as 4; 4 in two closely appressed pairs which condition has sometimes been interpreted as 2 pollinia each fully divided into equal or unequal halves; and yet other authors have maintained that the two conditions exist. However Garay, ibid. p. 153, points out emphatically that the two are one and the same condition and refers to the condition as "2 pollinia", each fully divided into equal or unequal halves.

Dressler on the other hand *(The Orchids, Natural History and Classification* (1981)57) refers to the condition as 4 in two closely appressed pairs and the present author believes that this interpretation has most merit. A third condition exists wherein the pollinia are clearly only 2 in number but each may be either entire or notched (or cleft) to varying degrees.

Garay, in the above-mentioned article, reminds us that it was Lindley, while preparing his *Genera and Species of Orchidaceous* plants(1840), who was the first to recognise in this branch of the family the importance of the structure of the labellum; particularly the structure and position of its callosities and excrescences, in determining or limiting genera.

The genus *Sarcochilus* is characterised by having 4 pollinia in two closely appressed pairs, a labellum which is hinged to the apex of the column foot, has large lateral lobes, is without a spur at the base but has a fleshy chin in front and, placed well forward and in the middle of the disc, a large centrally grooved callus (which, in some species is dilated distally and deeply grooved to make the callus double-headed) and there are two other more or less finger-like calli, which may be well developed or poorly so, one at the base of each lateral lobe opposite the central callus, and joined to the lateral lobes to varying degrees. The midlobe is often poorly developed or not clearly defined and it is not clear whether or not the fleshy chin is part of the midlobe or a modified midlobe.

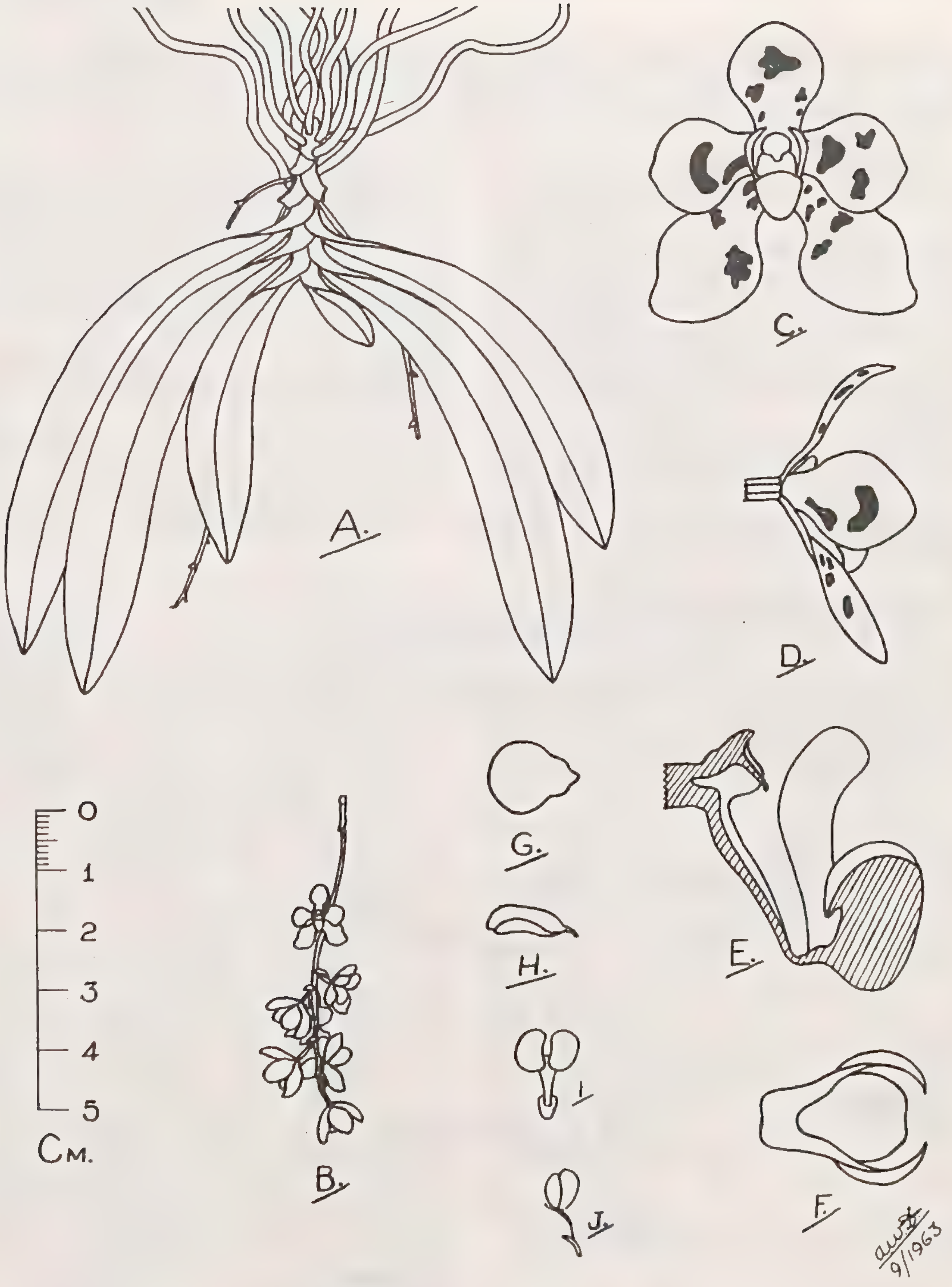
When preparing *Australasian Sarcanthinae* (1967), I realised that two species of *Sarcochilus, S. spathulatus* Rog. and *S. weinthalii* F.M. Bail., together with a yet undescribed species, entirely lacked the discal calli of *Sarcochilus* and could not, therefore, be rightly accommodated in that genus - *Pteroceras* was considered a possibility but as the only information I had concerning the genus Pteroceras at that time (when it was not known to occur in Australia) credited the genus with having 2 pollinia whereas the three species in question appeared to have 4 in two closely appressed pairs. Not realising at the time that, as pointed out by Garay, the "2 in 4" and "4 in 2" were one and the same condition, I considered that these three species could not be accommodated in *Pteroceras* and a new genus, *Parasarcochilus,* was created to accommondate them. Garay, correctly placed *P. hirticalcar* Dockr. and *P. spathulatus* (Rog.) Dockr. in the genus *Pteroceras.* However, it is difficult to understand why, on p. 192, he insists that *P. weinthalii* (F.M. Bail) Dockr. is a true *Sarcochilus* despite his insistence on p. 151 on the importance of calli in placing limits on genera but stating "It has neither spur nor sac to the lip. Apparently the elongate lateral lobes of the lip must have served as the reason for the ill-fated transfer". Needless to say it was not the elongated lateral lobes which served for the "ill-fated transfer' as all *Sarcochilus* have such, but the lack of the characteristic discal calli. *S. weinthalii* F.M. Bail. does not have the hollow chin of *Pteroceras* but a fleshy one and whether or not this would rightly exclude the species from *Pteroceras* is controversial as other genera, particularly *Sarcohilus,* have a chin which is variable in its degree of fleshiness. It is suggested, therefore, that until the matter of a fleshy chin being acceptable or not within *Pteroceras,* has been decided, our contentious species, which surely cannot be accommodated within *Sarcochilus,* be known as *Parasarcochilus weinthalii* (F.M. Bail.) Dockr.

9 December, 1982

P.O. Box 127, Atherton, Qld. 4883

Figure 4. PARASARCOCHILUS WEINTHALII (F.M. Bail.) Dockr.

A. Plant (out of flower) . . . . to indicated scale
B. Inflorescence . . . . to indicated scale
C. Flower from the front . . . . to scale x 4
D. Flower from the side . . . . to scale x 4
E. Median longitudinal section of column and labellum . . . . to scale x 10
F. Labellum from above . . . . to scale x 7
G. Anther from above . . . . to scale x10
H. Anther from the side . . . . to scale x 10
I. Pollinia from the front . . . . to scale x 10
J. Pollinia from the side . . . . to scale x 10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SPATHOGLOTTIS PLICATA - A MYSTERY SOLVED

By Dr P.S. Lavarack

In "Australian Indigenous Orchids I" Dockrill briefly mentioned an unidentified species of *Spathoglottis* recorded from Cape York Peninsula. A recent paper by Cribb and Tang (1982) describes the *Spathoglottis* species of Australia and the Pacific area. The authors record *Spathoglottis plicata* as occurring in Australia on the basis of the drawing on page 244 of "Australian Indigenous Orchids". I was able to compare pickled material of the Cape York species with the figures and description given by Cribb and Tang and came to the same conclusion. The specimen also keyed out to *S. plicata* in the key provided.

It therefore seems that the name *S. plicata* Blume should be added to the list of Australian orchids. The distribution is from the Endeavour River to the Jardine River on Cape York Peninsula. *S. paulinae,* the other Australian species also occurs on the Peninsula, having been collected in the region of Brown Creek to the west of Tozer's Gap. The two species may be separated by the lip which, in *S. plicata* is shaped like a T with the side lobes being at right angles to the mid-lobe, while in *S. paulinae,* the side lobes are at an acute angle to the mid-lobe. The flowers of *S. plicata* are considerably larger than those of *S. paulinae* and the flowers of the latter often do not open widely in contrast to the well-displayed flowers of *S. plicata.*

S. plicata is a widespread species occurring throughout the area from India to the Pacific Islands and is widely cultivated, often being used as a garden plant in tropical areas. The flowers vary in colour from white to purple. The Australian plants observed were rather large for the species having leaves about 90 cm long and an inflorescence of at least 80 cm. The flowers were light purple. The plants seen were growing in swampy conditions on the edge of a creek with ferns and pitcher plants surrounding them, just south of the Jardine River. Other specimens, probably of this species, were observed at Iron Range in similar conditions.

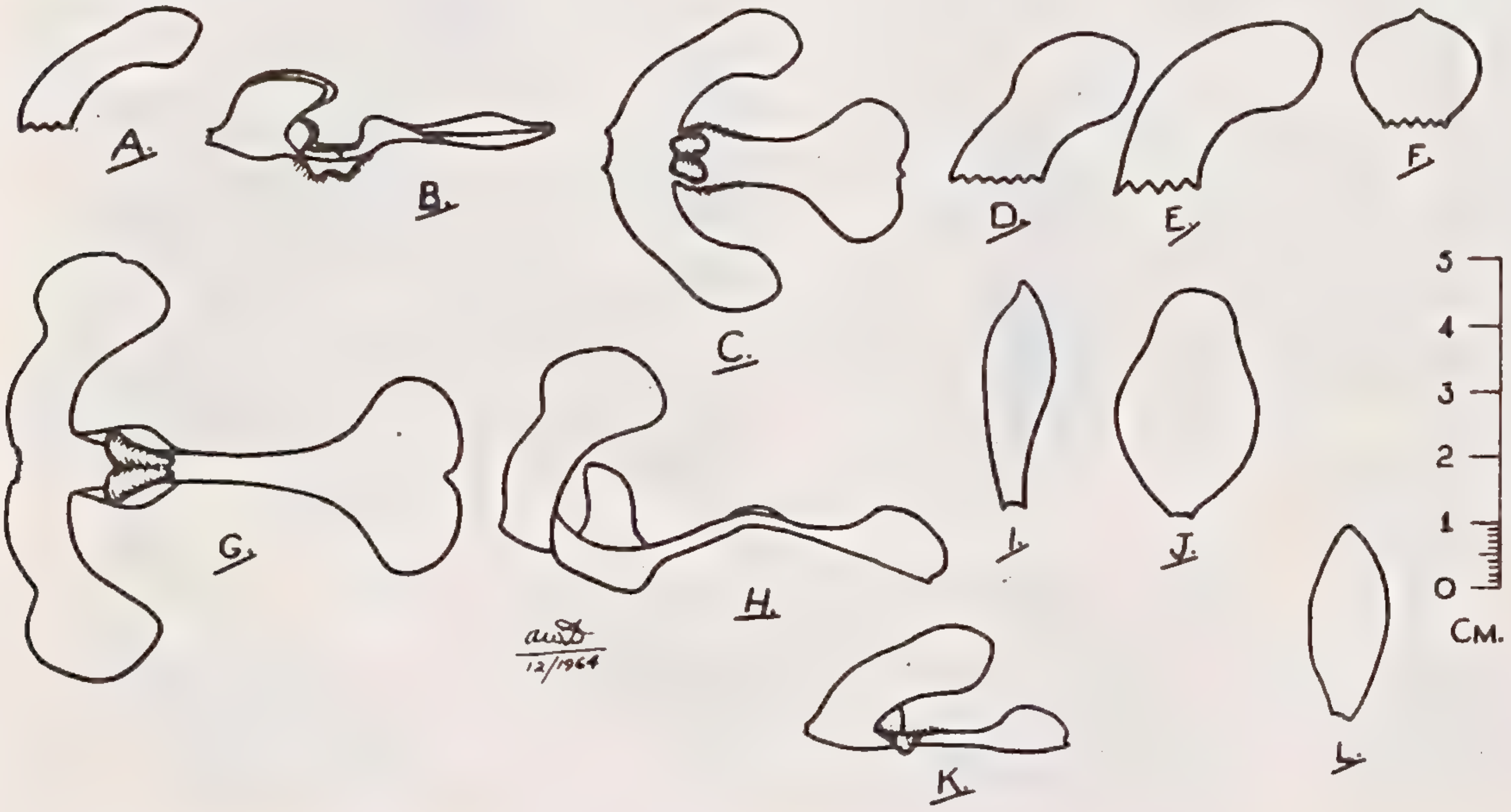
Reference: Cribb, P.J. and Tang C.Z. (1982). *Spathoglottis* (Orchidaceae) in Australia and the Pacific Islands. Kew Bull. 36 (4): 721 - 729 .

February 1983

SOME AUSTRALIAN *SPATHOGLOTTIS* - Drawings reproduced from **The Orchadian**, Vol. 2. No. 1, p. 5, August 1965, by A. W. Dockrill.

Key

A	Lateral lobe of labellum of paratype specm. of *S. paulinae*	to scale X 5
B	Labellum of *S. paulinae* taken from Fitzgerald — (I am unable to account for this shape).	
C.	Labellum, flattened out, of *S. paulinae* from the Barron River	to scale X 5
D.) E.)	Variations in lateral lobes of labellum of *S. paulinae* from Barron River	to scale X 5
F.	Variation of mid-lobe of labellum of Barron River, *S. paulinae*	to scale X 5
G.	Flattened out labellum of undescribed species of *Spathoglottis* from Cape York Peninsula	to scale X 5
H.	"G" from the side.	to scale X 5
I.	Lateral sepal of specm. "G"	to scale X 2
J.	Petal of specm. "G"	to scale X 2
K.	"C" from the side	to scale X 5
L.	Petal of *S. paulinae*	to scale X 2



BOOK REVIEWS

The Orchidaceae of German Guinea
(incorporating the Figure Atlas to the above) by Rudolf Schlechter

Edited by D.F. Blaxell, D.D.A., B.Sc., F.L.S. Published by the Australian Orchid Foundation, Melbourne 1982.

A translation into English of the German text of *Die Orchidaceen von Deutsch-Neu-Guinea (1914)* with original descriptions in Latin and including the *Figuren-Atlas* (analytical drawings 1928). In one volume 1180pp.; 2 maps; hard cover (green Coverex, gold blocked on spine and front cover). Price $150.00 (Aus.) incl. surface postage. Leather bound copies are available on enquiry from the AOF, 107 Roberts Street, Essendon, Victoria 3040, Australia.

It would be presumptuous to write a normal review of this major publication. Rudolf Schlechter's reputation as a great botanist was established long ago and has not been diminished by the years. For almost 70 years however, his work on the Orchids of New Guinea has been readily accessible only to readers having a good command of the German language; Considering the special significance of the subject-matter for modern orchidology, English speaking botanists and enthusiasts world-wide owe much to the AOF and its editorial committee under Don Blaxell for producing this translation.

This review is concerned, therefore, with what has been achieved by the AOF and what is in it for the reader.

First: this single volume, incorporating the two original German volumes, is massive. About 3 inches thick, with page size about 10 x 7 inches, it is at the maximum size for binding and very heavy to handle but it has the great advantage — even for those who possess the original two volumes and can cope with the German text — that we now have the complete work all together for the first time. Also we get explanatory Appendices and Maps of the German New Guinea of 1902, showing areas visited by Schlechter on his two great expeditions.

Second: for the serious student, meticulous care has been taken with the numerous editorial comments inserted in brackets into the text where doubt exists as to dates, places, and so on. Where obscure place-names are quoted by Schlechter the probable location is given. In short the editorial work has been done in a scholarly fashion after careful research.

Third: the Index, though confined to names of taxa, is adequate in view of the fact that the major part of the book is given to descriptions of individual species. Page references to Schlechter's analytical drawings are distinguished in italics. Groups of drawings are placed conveniently adjacent to the relevant text.

Fourth: of the 7 Appendices, two are of more than academic interest. Appendix 2 gives German geographical names from the text with comments as to later names and actual locations wherever possible. Appendix 4 supplies the itineraries followed by Schlechter on 2 expeditions (of 1901-1902 and 1906-1908).

Fifth: the best way to convey to readers of *The Orchadian* the importance of this work and the enormous task of its editorial committee is to emphasise that Schlechter described 1420 taxa in 116 genera and that 1185 of the taxa are described for the first time. Of the genera, 19 were described as new. To quote Schlechter's own words: "There is consequently, in New Guinea a fabulous wealth in orchids, which is not even approximately reached in any of the neighbouring regions of similar latitude, nor indeed in any other country or island complex of similar size in the world." This treasure house is now unlocked for English-speaking readers.

What is in it for those members of ANOS who confine their special interest to Australian indigenous orchids? The answer to this has been given by Dr P.S. Lavarack in the December 1982 issue of The Australian Orchid Review ("Schlechter's New Guinea Work and Australian Orchidology") which gives a convenient list of 35 Australian species described, mentioned and illustrated by Schlechter.

In the 53 pages of Schlechter's very readable introductory Chapters the armchair traveller may go across the narrow Torres Strait and into the mountainous terrain and the habitats so well described by the author. In these pages the author's enthusiasm and pleasure in new discovery is apparent — and infectious. What is written here is vital first-hand field experience backed up by proficient taxonomy and from it New Guinea emerges as the centre of speciation for the two largest genera of *Orchidaceae: Bulbophyllum* and *Dendrobium.*

3 February, 1983 **J.J. Betts**

"Native Orchids in Melbourne"
— A booklet published by the ANOS Victorian Group.

The 1981 edition of this useful little booklet was favourably reviewed in *The Orchadian* of December, 1981 (p. 40). The following details of a further revised edition have been lifted from the Victorian Group's "Bulletin" of December 1982:

"The terrestrial section of the above booklet has been completely re-written and the revised 1982 edition contains this new material. People who are interested in growing terrestrials will find this new edition well worth purchasing for $2.00 (plus 50c postage).

Unfortunately the cover is the same as earlier editions but for a quick check, there are 64 pages instead of 56, and page 2 is marked revised edition 1982. The authors, Rick Datodi and Helen Richards have drawn on their own experience and that of Mark Clements, National Botanic Gardens, Canberra, and they invite comments and criticisms. It is planned that the material will be regularly revised as cultural techniques are improved.

The epiphyte section in the 1982 edition is unchanged, but it is planned to expand it in the near future.

Books may be ordered from Clive Lloyd, 17 Leonard Close, South Clayton, 3169 ($2.00 plus 50c postage) or purchased at meetings.

Helen Richards would welcome any comments on the text of the booklet, either terrestrial or epiphytic section. Her address: 39 Ryland Avenue, Croydon, 3136."

The Orchadian is always pleased to publicise worthwhile books, booklets and journals judged to be of interest to our readers. In this case we cannot do more than copy the notice given above as we have not seen the new edition. We invite the attention of our readers with some confidence, however, in view of the excellence of the earlier edition of 1981. We note, too, that regular revisions will be made as cultural techniques are improved. We hope to have the privilege of seeing these revisions whenever they appear in future — and of keeping our readers well informed.

— Editor

BOOK REVIEW (Reprinted by kind permission of the author and the Editor of **The Garden** Journal of the Royal Horticultural Society).

The Orchids: Natural History and Classification
By R.L. Dressler
332 pp. Illus. 1981 (Harvard University Press £19.25*
* Current price in Australia through bookshops is $45.95.

Nearly 10% of all flowering plants are orchids and, with approximately 25,000 species, it ranks probably as the largest family. It is also one of the most widespread, diverse and biologically interesting yet I must agree with the author who says in his introduction "there have been pitifully few careful studies on any respect of the Orchidaceae". The reasons for this are far from clear but possibly lie in the large size of the family, there being far easier groups to work on, and the aversion of botanists to a group they consider oversubscribed with horticultural interest.

In this book the author sets out to provide an introduction to the family that, in a clear and readable manner, both summarises the present state of our knowledge of orchids and also seeks to identify the many gaps that remain. As the title suggests, the book is divided into two main sections, the first a survey of the natural history of the family and the second its classification.

The earlier chapters cover in some detail but with commendable clarity the nature, geographic distribution, structure, ecology and evolution of orchids. In each, the author's considerable experience as an orchid biologist adds a dimension lacking in most orchid books. The chapter on ecology which includes a detailed discussion on pollination based largely on the author's critical field work should prove particularly useful to growers, providing a theoretical base for their own largely empirical efforts. The chapter on evolution is the first I have read which is based firmly on fact and informed judgement rather than on guesswork. I particularly enjoyed Dressler's assessment of the merits of various orchid taxonomists the "splitting" and "lumping" syndromes. Having been accused of being both at various times I hope that I am not a candidate for his new category of "splimper" as one who is a "splitter" in his own specialities and a "lumper" of everyone else's.

The second half of the book is devoted to a thorough and welcome treatment of his own system of orchid classification. The author's philosophy, methods and evidence are clearly stated. This is a welcome innovation in orchid biology for none of the several other recent attempts to classify the orchids has done more than provide a skeletal outline of the system adopted with little or no attempt at justification. As the author says "We sometimes read that classification is merely a matter of opinion. This is clearly absurd . . . As soon as we have any knowledge about the plants, we have some basis for choosing one classification over another". Whilst emphasising the importance of floral characters and particularly those of the column, he takes full account of the evidence provided by other sources such as cytology, development studies, anatomy and the structure of the pollen.

Dressler's system represents a major advance in orchid classification. It differs from previous systems largely in its treatment of orchids with soft mealy pollen. Previously these had been placed together in the subfamily Neottioideae which Dressler sees as an unnatural group based on the possession of a single character namely the primitive pollen type. He has redistributed the tribes previously assigned there to better show their true affinities in three of the six subfamilies recognised by him. Thus the Vanillae, Gastrodieae, Epipogieae and Arethuseae are assigned to the Epidendroideae; the Erythrodeae and Cranichideae to his new subfamily, the Spiranthoideae; and the Neottieae are placed in the Orchidoideae.

His system has already met with some criticism particularly in the treatment outlined above but the onus is now on his critics to back their claims with evidence rather than with unsubstantiated prejudices.

Do not be put off by the technical terms and Latin names in the text. This book contains a wealth of information, enough to satisfy both the professional and amateur alike. Indeed, the *Guinness Book of Records* would do well to consult p. 9 and amend their new edition.

Dressler's well written and well produced book is a considerable achievement, essential for every orchid library. I am only sorry that it was not available to me several years ago when I first became interested in orchids.

Phillip Cribb

HABITAT

Epiphytes of the Illawarra

By Gerry Walsh

Over the years, many articles have been published in *The Orchadian* about the famous orchid haunts of the New South Wales north coast and Queensland. (The Manning and Hastings Rivers, the Barrington Tops and the Dorrigo Plateau to name but a few in New South Wales. Queensland has also been well discussed).

But one of Australia's greatest orchid districts has rarely attracted more than a line or two. I refer to the fabulous Illawarra district of New South Wales.

While I admit to having been to Queensland, once only, I have tramped many miles through N.S.W. while pursuing my love of orchids and the Australian bush in general, But for sheer orchid quality I must rate the Illawarra very near to best region of all.

My family tree has its roots firmly anchored in the Illawarra bush and can be traced back for 130 or more years. I was born on a small dairy farm nestling at the base of the high cliffs which enclose Kangaroo Valley. So I may be biassed!

Quite a few of our native orchids reach their southern limit of distribution in the Illawarra, mainly because this is also the southern limit of the sub-tropical rainforests.

The Epiphytic species are not as diverse as they are in the north; but it has been my observation that most of the species which do occur down here are equal in quantity, size and quality to those found in any other region of N.S.W., especially the quality. Having made such a sweeping statement, I shall begin with the *Dendrobium genius* first.

Dendrobium speciosum var. *speciosum,* is very prevalent in the Illawarra, and in my opinion, it completely outshines any other form in all locations I have seen in this state.

There are many areas of the Illawarra where *D. speciosum* covers cliff faces for hundreds of metres. It can be almost intoxicating on a warm morning in mid-Spring, to sit on top of a high cliff and let your lungs filter the perfume filled air rising from the countless "Rock Lilies" in the gullies below.

The stunted dwarfs growing in full sun at the cliff edge will nearly always give a fine crop of early opening flowers. I have seen rare clones in full bloom at the beginning of August. Most Illawarra clones open in late September - early October. These dwarfs will continue doing this in the shade house.

The best clones are nearly always found on the huge house-sized boulders which have fallen from the cliffs and come to rest precariously on the narrow shelves beneath. Here can be found gigantic individual clumps consisting of around 500 canes or more. These clumps are where the largest canes and longest racemes can be found.

Clones with canes nearly a metre long are not uncommon. But it is the thickness of the canes that makes them outstanding. Many are around 8 cm in diameter at their thickest section. The occasional giant can be found, and I once measured a swollen cane which had a circumference of 22 cm, although the cane length was only 0.5 of a metre.

On two occasions I have found a cane with six leaves. It is vary rare to see six leaves on var. *speciosum,* whereas on var. *hillii,* six leaves are frequently met with. Some readers may care to comment on this, I would be very interested!

The most beautiful clone I have ever seen grows at the head of a small gully near our old farm. Cane length is around the half metre, but it is the peculiar leaves that create interest. The average leaf would be about 25 cm long and 10 cm wide. Running from base to apex are three parallel channels about 1 cm deep and 1.5 cm wide. The apex is very rounded with no visible point. These leaves depart the cane at about a 100° giving a very flat-top appearance to the whole clone.

The flowers are the largest I know of and also the nearest thing to a white colour that I have seen. Unfortunately the clone is very shy to flower. Even in a good year, no more than 20 racemes would appear on perhaps 150 canes. Vegetative growth however is extremely vigorous.

D. speciosum var. *speciosum* also grows on trees, mainly on the coastal facing ranges in good stands of rainforest. Growth is thin as in var. *hillii,* but flowers are typical of var. *speciosum.*

D. speciosum is at its best as a lithophyte in and around the wet and dry sclerophyl forests. Rarely is a good clone found in a rainforest situation, except for the epiphytic types. The "Rock Lily" is truly king of the rocks.

Dendrobium linguiforme is a very common orchid in the Illawarra. It usually restricts itself to *Casuaring cunninghamiana* for a host, but rare plants are seen on other species. It is also very common as a lithophyte.

The best forms of *D. linguiforme* grow on the ancient casuarinas, or River Oaks, which line the banks of many of our larger creeks. It grows thickest on large, low limbs and often totally encircles the host branch. The leaves of these epiphytic plants are usually fat and long, and retain a healthy appearance until they are many seasons old.

In comparison, the lithopytic plants generally have long and narrow leaves, which are nearly always withered and sick looking. Despite their apparent poor condition, the lithophytes can always match the flowering performance of their fat cousins down by the creek. These rock dwellers seem to require similar conditions to *D. speciosum,* and frequently grow in association with it.

It is not uncommon to see three square metres of *D. linguiforme* growing on a rock face, and so tightly matted that very little bare stone will show through.

Flower shape and colour are typical for the species. A brisk breeze on a large colony of *D. linguiforme* will ruffle the delicate sprays of white and create an inspiring sight.

I have never found *Dendrobium tetragonum* to be common in the Illawarra. In fact, I know of only two small creeks in the north of this region where it grows. It is reasonably common in short sections of these creeks, however.

Cane length does not match that of plants in northern N.S.W. A big cane would barely reach to 25 cm. Flowers are similar in size and shape to those of the northern areas, but the colour is more of a pale yellow, and the red stripes are not as pronounced.

The favourite host tree is *Tristania laurina* (Water Gum), but *Backhousia myrtifolia* (Myrtle) is sometimes a host. *D. tetragonum* prefers to grow on the lower section of a tree, usually on the main trunk, but not infrequently on low hanging branches. Host trees are always very close to water and receive plenty of light.

I feel that this orchid is more widespread than my observations have revealed. Perhaps ANOS Wollongong group could comment on this? (No specific locations mentioned of course).

The dagger orchid, *Dendrobium pugioniforme,* achieves its handsome best on the trees and rocks of the Illawarra rainforests. These rainforests split into two groups, each having a distinctive vegetative form of *D. pugioniforme.*

The first habitat is the sub-tropical and warm-temperature rainforests which abound below the escarpment throughout the Illawarra. The form which occurs here is very common and can be easily distinguished by the very long and smooth leaves. The leaves often grow to 7 cm long and are spaced widely apart on the stem.

The epiphytic forms are pendulous and frequently reach 2 metres in length, but seldom achieve a large horizontal spread. Two or three stems would be the normal thing and these are often branched.

The lithophytic forms are similar in leaf and stem, but they rarely reach large pendulous lengths, stopping around the metre mark. In the larger, cascading mountain creeks, it is not unusual to find a large rock carpeted with hundreds of seedlings.

The second habitat is the high country brush community dominated by *Doryphora sassafras* and *Acmena smithii* (Lilly Pilly). These trees are characterised by stunted forms and heights, and they grow so close together that entry is extremely difficult. They are nearly always smothered in copious quantities of moss and lichen - and *D. pugioniforme.*

This type of brush is common in places, like the Robertson Plateau and Saddleback ridge. It is marvellous the way this community thrives, exposed as it is to the full fury of the Pacific Ocean.

The dagger orchids here take on vastly different appearances from that of their lowland namesakes. Leaves seldom reach 2 cm long, but are generally about the same in width, giving them a rhomboid appearance. Inter-leaf spacing is very cramped. Highland forms of 30 cm length can have as many leaves to the stem as the lowland plants of 100 cm. Also, the leaves are much thicker. On a flat rock in an exposed position, the layaring of one stem over the next can create an orchid mat up to 10 cm thick and covering several square metres.

To my way of thinking *D. pugioniforme* is one of our most desirable orchids.

I often sit on a cliff, contemplating, and wishing that nature had included the Blue Mountains and the Illawarra within the realm of *D. kingianum.* The vast area of suitable country would make a wonderful home for this orchid gem. But that is where *Dendrobium striolatum* comes into the scheme of things. I like to think of *D. striolatum* as the "Kingianum" of the South Coast. The one takes over where the other stops.

I have seen a vast amount of *D. striolatum,* from Victoria to the Blue Mountains, and have yet to see a clone that can match those of the Illawarra. The best Blue Mountains clones don't even compare with even the average forms from many sections of the Illawarra.

The ability of *D. striolatum* to colonise an area is astounding. In the southern parts of this region it is possible to follow the cliff rim for several miles and never be out of sight of outstanding clumps of it.

On a flat section of rock, growth can be so thick that each cylindrical leaf can go in no direction but straight up, reminiscent of *D. beckleri.* On a vertical rock face they can grow out horizontally.

The terete leaves are either purple or green, or a combination of the two, and they grow to 10 cm long. Thickness of leaf will distinguish Illawarra clones from plants of other districts: the fattest leaves can be 5 mm through.

This orchid is a lithophyte, but I have seen it scramble on to the base of an ancient *Eucalyptus obliqua* (Messmate). It favours exposed positions with plenty of light.

There are two other members of the genus *Dendrobium* which I have observed only rarely in the Illawarra. They are *D. teretifolium* and *D. aemulum.*

D. teretifolium I have seen on two occasions, and in each case the plants were of small size and not in flower. One was growing on *Ficus rubiginosa* (Port Jackson Fig) and the other on *Casuarina glauca* (Suamp Oak).

D. aemulum I have seen only once, but it was a magnificent plant, consisting of 14 canes around 15 cm long and very thick. It was growing on a hardwood tree (species unknown) in the south-west of the Illawarra.

Three sightings do not constitute a basis for discussion, and so no further comment will be made.

W.H. Nicholls in **Orchids of Australia** gives the distribution of *D. gracilicaule* as 'south to Kiama'. I do not know of anyone who has found this orchid growing in the Illawarra. Anyone who has, might please let me know. No specific localities should be mentioned of course.

The Bulbophyllum genus is represented by two species: *B. exiguum* and *B. crassulifolium B. minutissimum* exists in the Illawarra, but I have not met with it in the field.

B. crassulifolium is, to quote the textbooks, 'of sporadic occurrence but may be locally common.' It grows on trees and rocks, but always near fast flowing mountain creeks surrounded by heavy rainforest. Its favourite places are on low hanging branches and mossy boulders, always very close to running water, and always in heavy shade. Strangely, I have never seen a plant on *Tristania laurina,* which most orchids find to their liking. Most plants are just so much larger as to make me say that they are the best I have seen south of Dorrigo.

The leaves of our *B. exiguum* always look as if they have just been polished. They really glisten and are deep emerald green. Even the beautiful Barrington Tops has not revealed a plant to me with leaves as large as ours; and that area has the most bountiful supply of this orchid that I know of. The flowers from all areas are identical.

Bulbophyllum exiguum, while not our most impressive orchid, is certainly at the top of the list when it comes to survival ability.

This orchid often makes its home on high, exposed cliffs where ceaseless winds make the trees grow horizontal and gnarled. They gain footholds in small crevices and flourish there in full wind and sun. The moss they grow in is nearly always dry and brittle.

B. exiguum is equally at home in the cool dampness of a shady gully. It is common on trees and rocks and often forms large clumps, although it often goes unobserved, hiding in a sea of moss. It doesn't appear to be particular in its choice of host tree. There is nothing outstanding about the size of the plants, nor the colour or shape of the flower. But *B. exiguum* is one of those fighters that command admiration.

The flowers of *Liparis reflexa* impress me less than nearly any other native orchid, but not so the actual plant. There are few sights more attractive than a rock ledge dripping with water and draped in many plants of *L. reflexa.*

The best clones of this species always grow in cool shady conditions but not often in rainforest environs. It is almost exclusively a lithophyte although very rare plants can be seen on the lower trunks of mature trees. It is frequently seen on exposed cliffs in full sun, and often in association with *Dendrobium speciosum.* Its leaves remain short up here; but the plants are nonetheless healthy and vigorous.

The leaves of *L. reflexa* grow 30 cm long and are the nicest shade of green in any Illawarra orchid. The pseudobulbs do not grow as large as those of the North Coast giants. Then again, the North Coast plants rarely form such extensive mats.

Plectorrhiza tridentata, is extremely abundant in the Illawarra. And once again, the quality and size exceed those of most other regions of N.S.W. that I have seen - not just occasional plants; but the majority of plants.

In typical rainforest gullies in the Illawarra, thousands of plants can be found hanging from many different host trees, as well as rocks. Their preferred host, however, is *Tristiana laurina* (Water Gum).

I have noticed that the largest and healthiest plants are usually lithophytes. Plants with stems to 35 cms are not rare, and such a plant may have healthy leaves for half of that stem.

The ability of this orchid to colonise an area is incredible. On a large water gum growing in a suitable location, seedlings can grow in their hundreds, right out on the smallest twigs. Such a location would have moderate light intensity, be close to running water and have plenty of air movement.

I think the perfume of *P tridentata* is both the most potent and most appealing of any N.S.W. orchid, with *Dendrobium falcorostrum* a close second.

Cymbidium suave reaches its best dimensions on hardwood trees in wet sclerophyl forests. It is also often seen in the dry sclerophyl but never grows as well as it does in the former. I have never seen it grow on softwoods in rainforests down here, as it does occasionally on the mid-north coast.

Good areas to locate *C. suave* are hardwood forests that were logged before the 1960s. The large rotting stumps that survive are perfect spots for this orchid to grow and thrive. I grow this orchid very successfully in a metre long hollow log filled with the rotting heartwood of such a stump.

This orchid forms very large clumps, at times around one metre in diameter, with dozens of pseudobulbs. Flowers are typical in size for the species. Petals and sepals are the normal olive colour, but some flowers have labellums with exceedingly heavy markings.

Sarcochilus falcatus, in my opinion, is the pick of all the Illawarra orchids. Anyone who has spent some time with these "orange blossom" orchids will know that there are two distinct fragrances to their flowers. One is the vanilla-like scent common to many north coast plants. This fragrance does not occur in Illawarra forms of *S. falcatus.*

The other fragrance is that indefinable something which I cannot put into words. The reader will know what I mean. All Illawarra orchids have this fragrance, which I find most attractive. The first thing I do to any native orchid is put my nose into a flower and have a good sniff. Much of the pleasure I get from our orchids comes from their perfume.

The average flower size of *S. falcatus* in the Illawarra is definitely larger than the average size of those from any other area I have visited. There is a form growing here that I have seen only three or four times. It has flowers around 3.5 cm in diameter. They have typical purple marking on the labellum and sepals. They are very difficult to locate, because plant size is not outstanding.

These are not the biggest flowers however. That distinction belongs to the famous north coast form, which is pure white and has pale yellow markings on the labellum. These reach 4 cm wide but the perfume is faint and not pleasant at all. The Illawarra plants are infinitely more appealing, despite their smaller size.

They show preference for *Backhousia myrtifolia* (Myrtle) as a host tree, but an assortment of softwoods will suffice.They are often found far removed from surface water, but always in brush type bush. I have never seen a plant on a Casuarina in these parts; but that genus is a common north coast host.

Sarcochilus olivaceus is very common and grows to grand proportions, with leaves up to 10 cm long and 2.5 cm wide. Large plants can have about 9 leaves per plant.

Although nearly always seen as an epiphyte, the largest plants are mostly found growing on rocks. The odd boulder may carry a dozen plants but a hundred similar boulders in the same creek may be without a single plant.

Tristiania laurina (Water Gum) is the most common host once again, but a variety of other softwoods will be accepted. Plants can be found on most sections of a host, from the upper twigs to the very base of the trunk. It seems to attach its long roots only loosely to the bark of a host and many plants can be found hanging down limply from branches. The perfume of *S. olivaceus* is very frangrant. It is rarely found far from running water and must have a position with good air movement.

Sarcochilus hillii is very common, but is often overlooked, even when in flower. Steep, rocky slops above rainforest gullies - and a good covering of *Backhousia myrtifolia* (Myrtle) is just the thing.

This orchid seems to prefer the lower, shaded half of the tree, but is not restricted to this. Plants are less frequently seen on the trees deep in the rainforest gully.

S. hillii is grossly underestimated in the orchid world. It has many things going for it: good colour, long flowering period, unique plant form, tolerance to cold. I admit it lacks size in the flower, but if size were used as a criterion we should all be growing plastic, perfumeless exotics.

Well, that about sums up the epiphytes of the Illawarra. I have mentioned all those that I have seen with my own eyes and I must emphasise that every word I have written applies strictly to my personal knowledge of them. Every "orchid freak" draws on his own experiences, from the territory with which he is familiar. And every rock face and gully will be different in some way, no matter how insignificant, from those of the favourite haunts of the next "orchid freak".

There are two epiphytic orchids which I have never met with in the Illawarra. I have seen them elsewhere and I know that they do occur here. The are *Papillilabium beckleri* and *Sarcochilus australis.* I am still hoping to discover them.

Fanciers of terrestrials will no doubt throw their arms up in dismay, but unfortunately space does not permit a discussion on that branch of the orchid tree. Also, I must admit that my knowledge of them is not great.

I hope that some readers may have gained a little more knowledge than they had before reading this article. Even if only one thing has been learned, my efforts are rewarded.

55 Pembroke Street.,
CAMBRIDGE PARK, N.S.W. 2750

AOF APPEAL (A "Stop press" item)

CLONAL PROPAGATION OF PAPHIOPEDILUMS

Towards the end of March 1983 the AOF sent to its Members a Special Appeal to societies, commercial organisations and to all who are interested in orchids, "**specifically** to support the Foundation's undertaking" (see reference elsewhere in this issue of **The Orchadian**) - "to provide funds for a Research worker doing her Honours project at the Flinders University in S.A., that will allow her to continue her work". All donations are "Tax deductible". **Send to AOF C/-Osborne Court, Hawthorn, Victoria 3122.**

Although paphiopedilums are not within the scope of the Australian mainland any comments from readers could well appear in future "Letters to the Editor".

THE AUSTRALIAN ORCHID FOUNDATION — Notes on some of its Projects.

- **Victorian Orchid Survey.** This has been approved by the Research Committee. It should be considered a long-term project that will cover a number of years.
- **Shade House.** This project, submitted by Native O/S of South Australia to erect a shade house in the Adelaide Botanic Gardens, has been approved by the Research Committee as an excellent undertaking. Mr Cannon was thanked for his offer to provide shade cloth.
- **ANOS Colour Fund.** The Research Committee rejected this submission on the grounds that apart from being expensive the available funds of the A O F being committed, it was also regarded as not being necessary, as *most botanical journals do not feature colour — the small circulation proving the cost too expensive.*
- **Tissue Culture.** The Directors feel that *the study of the tissue culture of paphiopedilums undertaken by Miss Angela Cooper could be of great value.*
- **Cymbidium Nutrition.** This outgoing project has the full support of the Directors. Unfortunately, the Government has cut back on funding and staff have been reduced. Mr McCraith is not prepared to let these tests fall back and has already made several inspections and is also organising working parties to visit Knoxfield regularly, so that a close watch is maintained. There is a batch of 30 mericlones undergoing hydroponic treatment. Tests will begin 1 November, 1983, using various fertilizers on 60 matured cymbidium mericlones.
- **Rhizanthella gardneri.** The work being undertaken by Dr Dixon is regarded as being of great value. The finance required was $1370.00 to be made available in February 1983.
- **Indigenous Orchids Vol. II.** This was to be a second volume to Dockrill's Vol. I. It is now regarded as "not viable".
- **Postage Stamps Campaign.** Following on the AOF Chairman's letter to Australia Post regarding the featuring of orchids on an issue of stamps, this has been supported by quite a number of orchid lovers who have sent letters direct to Australia Post, thus supporting the campaign.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New Registrations by the R.H.S. March - July 1982 — from lists in the **Orchid Review** September - December 1982)

NAME	PARENTAGE	REGISTERED BY (Originator in brackets)
SARCOCHILUS		
Devil's Tower	Shooting Star x *hartmannii*	D. Banks
DENDROBIUM		
Gracious Cascades	*speciosum* x *Xgracillimum*	D.M. Cannon (W. & J. Cannons)
Kim Heinze	Blushing Star x Hilda Poxon	D.M. Cannon
Peach Star	*tetragonum* x Hastings	D.M. Cannon

LETTER TO THE EDITOR

6th December, 1982

The Editor,
"The Orchadian",
C/- B & C Mailing Services Pty Ltd.,
G.P.O. Box 4142,
SYDNEY, N.S.W. 2001

Dear Sir,

We have read Mark Clements's Checklist of Australian Orchidaceae several times, from cover to cover. We have discussed it together and wish to make the following comments.

Firstly, it is a tremendous piece of work, representing many hours of effort and deserving all our congratulations. It is a first and like all other firsts it will be subject to people finding details both to query and to improve.

We found some instances of reclassifications of which we were not aware and some cases of what we thought were accepted varieties reduced to only a synonym of a variety. These occurrences indicate to us that holotypes of the "new varieties" have never been presented to the Herbarium or if they have, that they never been classified and published.

With these and other similar comments in mind, we orchid lovers should first adopt this Checklist as an Initial Standard and then progress from there. If any corrections - such as the varieties referred to above - do occur, we should submit specimens and accompanying papers to an official herbarium. If some herbaria already have such specimens and papers, they must be reported for inclusion in future Checklists.

The important thing is to get this Checklist accepted as a true standard now. We must all work from there without prejudice or bias.

The first step has been taken. It is now up to us to recognise "omisions" and "errors" and to correct them by presenting factual information to the National Herbarium.

All of this, done properly, represents the standard of management and professionalism in our Society, standards which determine our status.

Mark Clements is to be commended for his efforts, without reference to any omissions. The Checklists is an excellent starting point for us and we must adopt it. If we work collectively to contribute to its updating as new events occur or omissions are noted, we will have a thoroughly reliable reference book: the best in the world on Australasian Orchids.

Norm Hall,
151 Carrington Road,
Randwick, 2031.

Peter Leithhead,
44 Walker Avenue,
Gymea, 2227.

This letter was not received by the Editor until 15/2/83. To avoid delay, correspondents and contributors are again requested to address material to the Editor's address and NOT to our Printer or to the ANOS address. Refer to The Orchadian — Editorial page — without necessarily reading from cover to cover.

"FLASKING" —

The Propagation of Orchids in a Reliable Fashion from Seeds

by Kevin Western

This article has its origin in the form of a talk-cum-demonstration which I presented to the Native Orchid Society of South Australia at its June 1980 meeting. Those rough notes were later upgraded and updated to become an article which featured in the October, November and December Journal of the Native Orchid Society of South Australia. Now, owing to the quite dynamic nature of progress in the understanding of this field, especially as it applies to our Australian native orchids and in particular, to the terrestrial orchids, a further update is desirable.

The major fear that I have, in committing such an article to print, is that many readers assume that authors are experts and therefore fail to question what has been written. I am not an expert in the cultivation of orchids. Rather, I am a hospital pharmacist responsible, among other things, for the running and operation of the "Sterile Products" section of a large South Australian Hospital. The understanding of basic principles of sterility and compounding, as applied to the production and manipulation of medications is readily applicable to the art of "Flasking". This knowledge, coupled with experience, as a "hobbyist" in the practical art of flasking orchids, is the reason I have been prepared to go into print.

The article itself has been limited to a discussion of raising orchids from seed. This is basically where the state of the art currently lies with respect to the native orchids. However, on a broader scale, the term "flasking" applied to orchids, covers mericloning, zygote culture, stem propagation and so on. These techniques apply to ferns, African violets, grape vines etc. and even to the cloning of animals and to the processes involved in the laboratory stages of so-called "test-tube babies".

As a concept, the process of flasking has some important potential uses:— Firstly, it is a means of enabling definite and large scale reproduction of endangered species in the laboratory. This, coupled with skilled and organised replanting, at a later date, is a means of ensuring the continuation of such species in the wild. Unfortunately this aspect is bound to become more and more important as time and general devastation of natural scrub areas extends.

Secondly, it is a means of producing naturally occurring species so that all interested hobbyists may obtain the plants they desire, without promoting collection and removal of wild specimens.

Thirdly, it is a means of producing numbers of hybrids aimed at satisfying many hobbyists who want to have bigger brighter prettier and hardier plants to grow in their collections.

Further, the use of flasking techniques for orchids is currently widespread especially in the case of cultivators of cymbidium, cattleya, paphiopedilum and other genera for the general trade. Great numbers of local, interstate and international commercial and hobbyist orchid growers annually churn out great numbers of mericlones and crosses involving species, hybrids and cultivars. For evidence of this one has only to see the expensive "Colour glossies" which larger orchid nurseries have printed each year in order to entice us to buy plants or even flasks of young seedlings or mericlones. Today's range and availability of orchids is totally due to the success of the process of "flasking".

Historically, the idea of growing plant tissue, under laboratory conditions, other than on a plant, was conceived in 1902 by Haberland, a German plant physiologist. His attempts were unsuccessful but his work inspired others. Knudson, in 1922 succeeded in growing orchid plants from seed, under sterile conditions. In Adelaide, the technique of growing orchids from seed at home was pioneered simply and effectively by a small group of members of the Adelaide Orchid Club. Previously the technique had been entirely confined to laboratories in the U.S.A. and Europe.

Some definitions are essential:

(i) **SEED** A seed is produced from the union of an orchid pollen with an orchid egg-cell. This represents the sexual reproduction process in plants and thus a seed can be directly likened to a foetus at conception. Notably, a seed has some ability to remain dormant — a feature which varies from species to species.

(ii) **SEEDLING** A seedling is a plant produced by the germination of a seed. Each seedling is unique although similar in some respects to each of its parents and other seedlings from the same cross.

(iii) **SPECIES** A species may be defined as a "normally breeding population". Members of the same species are usually similar in colour, size, shape, form and environmental requirement Crossing plants/animals/orchids of the same species produces more members of the same species.

(iv) **HYBRIDS** botanically speaking — a hybrid is a plant, produced from a seed which itself was produced by crossing the pollen from one species of plant or orchid with the egg-cells of another species of plant or orchid. In the animal kingdom the crossing of a horse with a donkey produces a mule. Hybrids may be sterile or fertile.

By now one could be excused for asking "Why worry to raise orchids in this way? Isn't there some other (easier) way?" — To answer that, one must examine what happens in nature. Here there is balance. Some pollinating agent, for example, a flying insect, seeks out an orchid flower for its scent or nectar. During the trip through the flower parts to find the nectar or scent source, the pollinia become deposited on the female receptor of that flower and so fertilisation takes place. The result is likely to be seed — especially if both flowers are of the same species. Now, in the suburban back yard, except for strongly scent-attracting orchids e.g. *Cryptostylis* species, the necessary pollinating insect is not particularly likely to be present, even if the orchid species involved is a "local" species. To produce seeds on cultivated native orchids artificial pollination (deliberate — by hand) is likely to be necessary.

Back now to nature (and it's the same for your potted specimens at home): after pollination the pollen particles grow tubes which extend into the region of the egg-cells whereupon their genes unite with the eggs and seeds are produced. As the seeds grow and mature, the pod is seen to swell. In nature, the pod ripens, dries and opens to release the seeds which are so light and small that thousands are produced within the one pod and are then scattered afar by agents such as wind and water. Also in the same habitat where orchids grow there are fungi. Some of these fungi may be of a species which is very special to the orchid. If the orchid seed falls on to an area inhabited by this fungus, the fungus will attempt to invade the seed. As it attempts to do so the seed becomes activated, controls the fungus and uses it as its own food source: in fact, in a complete turn-around of the usual procedure, the young seedling becomes a parasite on the fungus.

From the fungus the seedling derives its sugars, minerals, trace elements, water and possibly even vitamins and other growth factors such as hormones. If the seed falls on the wrong fungus, either the fungus will invade the seed and destroy it or else the seed may kill the fungus and then die of starvation. The chances of the seed striking up with the compatible species of fungus and germinating are quite rare, even in nature in the normal environment and habitat. (Otherwise orchids would be infinitely abundant.)

The chances of an orchid seed falling on the correct fungus in one's backyard are significantly less likely than in nature. Further, the environmental conditions needed for **continued** survival and growth of the seedling are not likely to exist there as they do in nature.

Because the orchids have learned to use one or more of the fungi normally existing in the natural orchid habitat to provide their seeds and seedlings with nutrient, the seeds produced by orchids are not provided with any internal food source of their own with which to start their life as in, say, a pea or a maize seed. These are provided with ample starch, sugars, etc. to sustain the seedling until it has produced roots and shoots sufficient to sustain its independent growth.

To grow orchids from seed, then, one must do one of two things —

A. Produce and/or collect orchid seed to save it until a suitable time of year, e.g. the wet season, and then sow it in the soil amongst some litter on the pot of a parent terrestrial orchid or about the root area of an epiphyte and hope that the correct "germinating" fungus is still associated with the parent plant. By ensuring that subsequent environmental conditions will nurture the new seedlings it may be possible to produce some seedlings and grow them to mature plants. Whilst this technique has been found to work, the success is limited and is not generally predictable.

B. Provide the essential nutrients the fungus would normally supply. This was the reasoning behind Knudson's success in 1922. The problem is that such a brew of essential sugars, minerals, trace elements, water etc. will grow bacteria, moulds and fungi so well that the bacteria etc, grow so vigorously as to destroy the accompanying orchid seed. The only way to solve this problem is to sterilise the growing nutrient in containers which will keep bacteria and fungi out after sterilisation. Also the seeds must be sterile and must be added to the growth nutrient by a sterile technique.

Unfortunately some more definitions are necessary:—

(i) **MEDIUM (Singular) or MEDIA (plural)**:— terms used to describe the nutrient mixture used to grow the orchid seed. It may be liquid; but more usually is solidified by the inclusion of about 1% agar to achieve a jelly like consistency when set.

(ii) **STERILE**:— This means the **complete absence** of all "wogs". Like "pregnant" or "dead", there is no such thing as "almost sterile" or "nearly sterile". An environment or seed is either sterile or it is not.

There are numerous formulae for orchid seed growing media, all of which are more or less successful, depending on whether or not they are suited to the species or type of orchid one sows on them. Media are made up by weighing out the correct amount of each ingredient as specified in the formula, very much as if one were measuring ingredients to bake a cake, except that the amounts involved are generally very small, e.g. amounts of about 1 microgram (or about one 30,000th of an ounce) to about one-100th to one-30th of an ounce are common.

The ingredient chemicals used to prepare such media should be "Analytical" grade reagents. The required quantities of each can be weighed out by any pharmaceutical chemist. If one is likely to make several batches of medium over a relatively short period of time it is convenient to prepare concentrated stock solutions of each ingredient, e.g. 2.5 grams Magnesium Sulphate to 1000 ml of distilled water contains 0.25 grams of Magnesium Sulphate in each 100 ml of distilled water. Hence to measure 0.25 gm one needs only to measure out 100 ml of solution. The water used to prepare orchid nutrient should be TRUE "distilled water" — **not** de-ionised water for motor car batteries. It is also possible to use rainwater collected from scrupulously clean plastic sheeting into a well rinsed plastic container. Collection of such rainwater should occur only after rain has been falling for more than twenty minutes in order that there are no sginificant quantities of airborne pollutants in the atmosphere. Such water can be stored in plastic containers for future use. Each formula ingredient is dissolved in a little of the water then mixed together and finally adjusted to the required volume. Generally it is best to combine all the formula salts and make the solution almost to volume, heat to about 94° centigrade, add the agar and stir well to dissolve it. Then add the sugar and adjust to final volume. The pH should then be checked using "Narrow Range" pH papers or a pH meter. Adjustment can be made using a dilute potassium hydronide if pH is too low or dilute Hydrochloric acid or acetic acid if pH is too high. (Adjustment must be made slowly and carefully so as not to overshoot the mark and necessitate counter-adjusting.) I have produced good media without pH adjusting but I believe more consistent good results are likely if pH is adjusted to the suggested level.

The bulk (well mixed) solution, whilst still hot, is poured into the final flasks or containers. The flasks are then "stoppered" and the batch is sterilised.

Suitable containers range from glass milk or fruit juice bottles, plugged with tightly packed cotton wool bungs or capped with aluminium foil, to fancy laboratory plastic or glass media containers with special bungs. They all work well in the hands of careful operators.

At home, a pressure cooker is a good steriliser. The containers of media, and any necessarily sterile equipment for later use, (equipment should be wrapped in cotton fabric) are placed in the pressure cooker once the water has reached the boil with the covering weight OFF. The lid and weight should then be replaced and the boiling continued for a further 35—45 minutes. After this, the flasks should be quickly removed from the pressure cooker and allowed to cool and set. If unfamiliar with your sterilisation technique it would be wise to set the medium aside for 10 — 14 days to check that no organisms have survived heating and are seen growing in the medium. Don't plant into infected flasks. If such contamination does occur, increase the sterilisation time used in future batches. If you find a successful system, take care when sterilising larger-volume-than-usual packs. Larger packs take longer to warm up. Also, the packs of instruments in cotton or linen wrapping should be dried out in an electric frypan or oven if they are not used immediately after sterilisation. Alternatively it is possible to "flame sterilise" any metal equipment at the time of use and during actual use. Red heat is great if possible — otherwise "good and hot" is OK. Also, I have seen and used some very good media which were sterilised by placing the flasks in a tray of water and placing them in a hot oven set at 450° centigrade for 45 minutes.

Now we have sterile seed and a sterile medium to sow it on. Now we need a suitable working environment where bacterial and mould spores — airborne and on flat surfaces — are minimal. There are a number of choices:—

(1) Laminex kitchen table:— close all doors and windows — no-one but the operator(s) in the room. Swab the table top down with a fresh mixture of 1 part "White King" to six parts recently boiled and cooled tap water.

(2) A "Sterile Tent": This is a box, prepared from sheet perspex or glass or supported plastic sheet with holes or space to permit entry of the flasks, equipment, hands and forearms and which is clear to permit easy observation of the work one is intending to do. The interior of this tent is sprayed with methylated spirit or "White King"/water mixture. All equipment, flasks, etc. are sprayed on the exterior before being placed in the tent. After five minutes the interior of the tent will have become sterile and the packs of equipment and the flasks are sterile inside and out.

The next requirement is for sterile seed. There are two possibile sources of sterile seed:—

(1) **GREEN POD TECHNIQUE** Seed contained within an INTACT green seed pod has a high probability of being sterile. Such a pod is

taken after a suitable period of maturation (variable from species to species) but prior to ripening. The pod is cut from the plant and has its exterior sterilised by scrubbing with a soft tooth-brush using White King/water mixture to which a drop of Methylated Spirit has been added. After scrubbing, a further 10 minutes soak in the sterile tent will complete sterilisation of the pod interior. The pod is then handled by sterile tweezers or other technique to prevent re-contamination of the pod exterior. Prior to the process of manipulation within the sterile tent, the hands and forearms must be decontaminated. This is achieved by scrubbing firstly with a soap or disinfectant, followed by a rinse and followed in turn by swabbing with Methylated Spirit or White King/water mixture. Even now, though, one cannot be sure that the hands and forearms are actually sterile, so throughout the procedure one should use instruments and keep hands as far away from vital points such as flask rims, seed, bungs and media as is practical. Resterilise hands and forearms occasionally during any lengthy procedures.

(2) **DRY SEED TECHNIQUE** Dry seed from open pods or seed which has been stored dry is almost certainly non-sterile. This can be rendered sterile with a 90-99% likelihood of success, by using the one-to-six dilution of White King bleach plus one drop of methylated spirit and soaking the seeds in this solution, in a screw-cap container in the sterile tent for at least 5 to 15 minutes, shaking throughout this time. NOTE! — the shorter the time the less seeds are damaged but some "wogs" may survive too. The longer the time, the less seeds survive but there is a higher chance that the wogs will have died. The balance must be found by experience. The seed will be found either to float or to sink when wet. If it floats, it can be removed from the solution (in the sterile tent) by means of a sterile wire loop or glass rod and can be transferred directly to the flask(s) of medium. This seed can then be dispersed over the surface of the medium with the small amount of fluid which is usually present on the surface even after the medium has set. This also dilutes the small amount of White King which was transferred with the seed. Reseal the flask; remove it from the sterile tent and label it. (NOTE: Seed which sinks while in the sterilising solution can be collected by letting the solution stand still for a few minutes, pouring off the excess fliud and looping the seed out and continuing as described above.)

The above technique works well for many epiphytes and a few species of native terrestrials. The formula of Vacin and Went is reasonably suitable for some of those terrestrials.

Once the seed has been sown the flask should be stored warm (70 - 75° Fahrenheit) in low light conditions and should be observed for signs of swelling prior to growth. Once this swelling has occurred the flask can be progressively exposed to more light. I have used sunlight, filtered by "scrim" curtain in an eastern window and supplemented by fluorescent light from noon to midnight to grow orchids in flasks and the results have been good. Even unsupplemented, filtered sunlight has given reasonable results. Best results are said to come from "GRO-LUX" or equivalent fluorescent lights set at about 300 mm above the flasks and turned on for 16 of the 24 hours a day. I am currently experimenting and so far the results are encouraging to say the least.

After all that — there are still species of Australian native orchids which either will not germinate or will not grow on such media. Presumably this is because some essential factor(s) are absent from typical media formulae or because they are too potent or for some other biological reason. A technique used by staff at the Canberra Botanical Gardens involves medium based on oats or starch with pH adjusted to 5.2 to 5.5. "Green Pod" or "Dry Seed" techniques as previously described are used but now there is an essential difference. Wild orchid piants, especially terrestrials, grow in association with symbiotic fungi which infect some underground portions of the plant or plant roots. Sections of these portions are examined under 10 — 20 x microscopic magnification to detect fungi. Any fungi so found are grown on a fungal support medium. The fungi are tested with the seed taken from the species of orchid from which the fungus was derived, using the oats or starch medium. If the isolated fungi are suitable, the seed will be germinated and growth will occur. This is referred to as Symbiotic Culture as opposed to the formerly described, totally sterile process, which is known as aseptic culture. After germination has occurred the lighting process is carried out as above.

Once the seedlings are suitably large or have produced tubers (i.e. terrestrials), they can be removed from the flask, washed reasonably free from medium and planted into a medium or soil suitable to the species of orchid. Care should be taken to harden the young seedlings and to initially avoid harsh windy, hot, sunny or drying conditions.

P.O. Box 276
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Sth Australia

May 1982

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Who's Who

THE AUSTRALASIAN NATIVE ORCHID SOCIETY OFFICERS AND GROUP CONTACTS:

A.N.O.S. Council:
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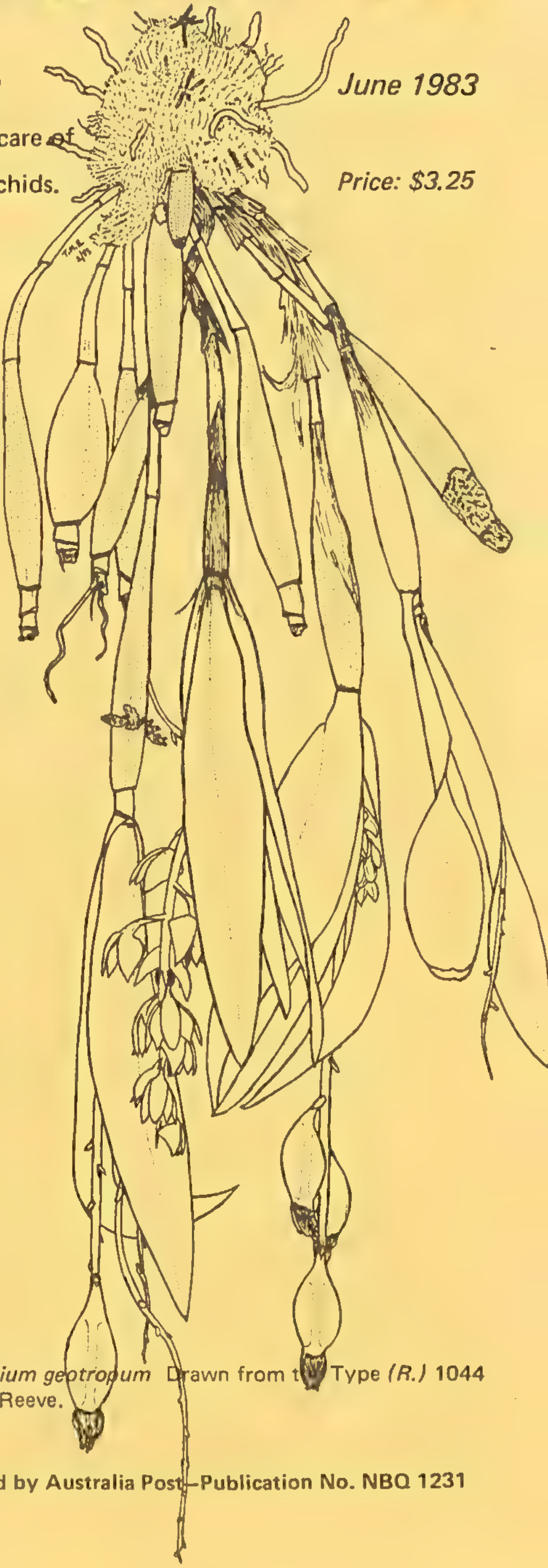

Dendrobium geotropum Drawn from the Type *(R.)* 1044 by T.M. Reeve.

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EDITORIAL

This year's Annual General Meeting, preceded by an Extraordinary General Meeting (see notices in this issue) will be extremely important and could prove to be a turning-point for ANOS after its 20 years as a national body concerned with Australasian orchids. Re-organisation will depend upon members' votes in person or by proxy; so be in it!

A new ANOS Group, the first in Tasmania, was inaugurated on 27 April, 1983. To be known as the ANOS Bass Group, its initial meeting at the home of Mr and Mrs M. Nutting, 21 Bay St, Burnie, elected Peter Jackson as President and Malcolm Nutting as Vice-President. The Secretary is Gwen Smith, R.D. 793, Kindred, Tasmania 7310. Starting with a Group meeting on 25 May at 8pm at the Hellyer College, Burnie, future meetings will be held on a two-monthly basis. Details of future location and times of meetings may be had from the Hon. Secretary. A drive for members is being made through newspapers, radio stations and various societies. Good luck, Bass Group. Please keep *The Orchadian* posted on developments.

The combined Sydney Groups of the Australasian Native Orchid Society presented their first Winter Show at the Ryde School of Horticulture on Sunday, 1 May, 1983. It was significant for a number of reasons:
(a) it extends the scope of entries for the Ira Butler annual award for Australian Native Orchid Hybrid of the Year (so far drawn only from Spring shows throughout Australia); (b) it will enable the public to see a wide range of native species never seen at spring shows; and (c) it should dispel the popular idea that only the spring months can bring out a worthwhile display of native orchid flowers.

This First Winter Show was largely experimental. The three Sydney Groups of ANOS pooled their floral resources to mount a show on a limited scale—limited by short notice publicity and limited to one day. Many members had some misgivings about its feasibility. In some collections it was near the end of the *Dendrobium bigibbum* and *D. X. superbiens* flush and too early for many of our terrestrials. How wrong can one be?

While the spring shows can be delightfully overpowering in their abundance of plants—making it difficult to take them all in at one visit—this "Winter" experiment had the important advantage of highlighting so many unusual species for careful and leisurely appreciation.

The organisers are to be congratulated on the success of their experiment. Let us hope they will repeat it next year with wider and earlier publicity.

Feedback and Follow-up

- **A letter to the Editor,** from the Editor of the ANOS Victorian Group's Bulletin, Paul Phillips, points out that the "Checklist of Australian Native Orchid Hybrids" contains an entry (Dendrobium Three Star = *D. X superbiens x johannis)* which is inconsistent with a later registration reported in *Orchadian* Vol. 7 No. 2, p. 45 in which the same parentage is applied to D. D'Bush Chic. I have informed Mr Phillips as follows:

"The name Three Star was registered in 1954 by S. Imura of Hawaii. It appeared in Sander's List 1946-60 with parentage shown as *johannis x goldiei.* The compilers of the 1st edition of the ANOS Checklist were aware that Dockrill (*Aust. Indig. Orchids,* p.47) had referred to *D. goldiei* Reichb.f. as one of a series of introgressive natural hybrids between *D. bigibbum* Ldl.,and *D. discolor* Ldl. This was interpreted simply as the equivalent of *D. x superbiens.* In retrospect this appears to have been unwise — even though there is support for it in Holttum (*Orchids of Malaya,* p.301); and Hawkes (*Encycl.* p. 161) also includes *D. goldiei* as a synonym of *D. x superbiens.* The former is also listed in Clements *Preliminary Checklist* (1982) as a synonym of *D. x superbiens.* Nevertheless, as pointed out by Don Blaxell and Don Barnham (*Orchadian* Vol. 6, No. 3, p.57), D. *x superbiens* is not only very variable but also has been involved in complex backcrossing in nature thus leading to doubts as to the true identity of *D. goldiei."*

As Dockrill excludes *D. goldiei* from his "Aust. Indigenous Orchids" quite specifically (p.447) one is tempted to eliminate all reference to it from the next edition of the ANOS "Checklist". In that case the hybrid "Three Star", as registered by the R.H.S. in 1954, would also be eliminated. On the other hand because the R.H.S. accepted D. *goldiei* as a valid concept for registration and as it is extremely likely that a plant so named would be a complex back-crossed natural hybrid of all-Australian parentage, our "Checklist" could be considered incomplete without it. As the R.H.S. has accepted *D. x superbiens* as distinct from *D. goldiei* for registration purposes we seem to have no option. However I shall welcome readers' opinions on this problem before the next edition of the ANOS Checklist is prepared — probably during 1984. Please address any correspondence to the Editor at his home address.

TAXONOMY

A REASSESSMENT OF *DENDROBIUM MIRBELIANUM* GAUD. AND THE TRUE IDENTITY OF *D. WILKIANUM* RUPP

by P.J. Cribb and D.F. Blaxell

Summary: The morphological variation of the widrespead *D. mirbelianum* encompasses *D. wilkianum* Rupp, previously considered to be endemic to northern Queensland, *D. aruanum* Kraenzl. and *D. giulianettii* F.M. Bail. However, *D. calophyllum* Rchb. f. (including *D. rimannii* Rchb. f.) previously considered conspecific by some authorities, is raised to specific rank again.

Dendrobium mirbelianum was one of the first species to be described in sect. *Spatulata* (syn. sect. *Ceratobium).* The type was collected at Rawak on Waigeo Island off the north west coast of New Guinea. It has proved to be one of the most widespread species in the section ranging from the Moluccas eastwards to the Bismarck Archipelago and south to the Queensland coast (see map 1).

It is a distinctive orchid readily distinguished by its mustardy or greenish-yellow flowers, purple-veined on the lip, its scarcely twisted spathulate subacute petals, untwisted sepals and distinctively shaped lip. The mid-lobe of the lip is ovate and acute with undulate margins and the lip is ornamented with a low, white, three-ridged callus in which the callus ridges are not distally elevated but taper out on the mid-lobe. The callus mid-ridge may also be somewhat undulate in the distal half.

The extensive distribution of D. *mirbelianum*, as now envisaged, may explain much of the synonymy listed below, with plants collected in widely separated localities being described as new species, often by botanists lacking access to the type material of others. However, it is also apparent that *D. mirbelianum* is morphologically rather variable. Flowers can be found on specimens with pseudobulbs ranging from 15 cm to more than a metre in length and the flowers themselves can vary, particularly in size and in lip shape. Specimens from Australia, including the Type of *D. wilkianum,* and some from Papua, consistently have smaller flowers with a smaller mid-lobe than those from elsewhere in New Guinea and the Moluccas. Field observations indicate that these plants are consistently self-pollinating. The range of flower size in Australian specimens is compared with that of specimens from the rest of the distribution range in Fig. 2.

The flowers may also vary in plants that are normally allogamous. In particular, plants from the northern coast of New Guinea and adjacent islands have longer segments and a longer lip in which the side lobes do not overlap the base of the mid-lobe. The Types of *D. mirbelianum* and *D. buluense* fall in this group while those of D. *polycarpum* and *D. giulianettii* have shorter segments and a lip in which the side lobes overlap the base of the mid-lobe.

D. rosenbergii is included in the list of synonyms on the strength of Kraenzlin's reduction of *Angraecum flavum septimum* Rumphius, upon which *D. rosenbergii* is based, to synonymy under *D. mirbelianum.*

Although the Type material of *D. aruanum* has probably been destroyed, it seems likely on the basis of the original description that it should also be considered conspecific with *D. mirbelianum.* Further weight has recently been added by the collection of *D. mirbelianum* from nearby Adi Island (*Moll* BW 9824).

D. mirbelianum *Gaud.* in Freycinet, Voy. Bot. 423, t. 38 (1926). Type: Waigeo Isl., Rawak, *Gaudichaud* (P, holo!)

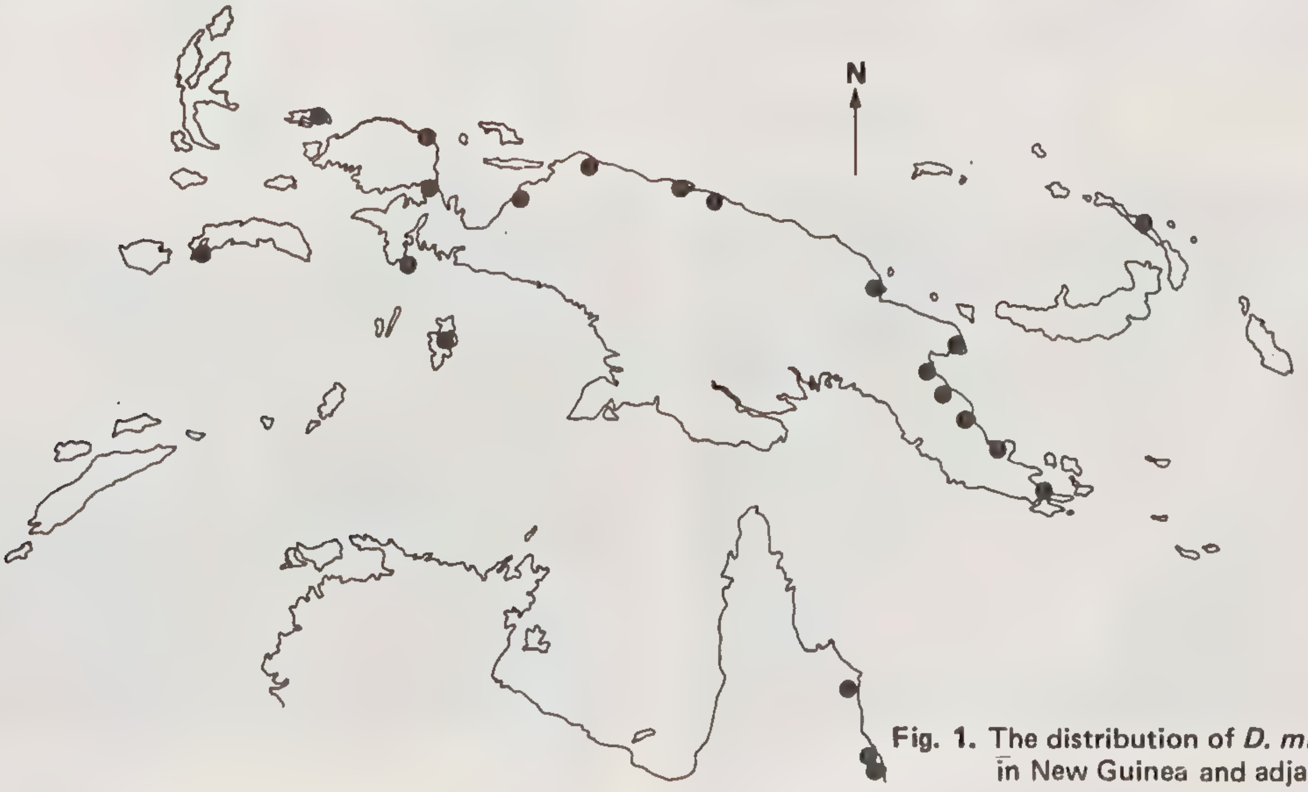

Fig. 1. The distribution of *D. mirbelianum* in New Guinea and adjacent areas.

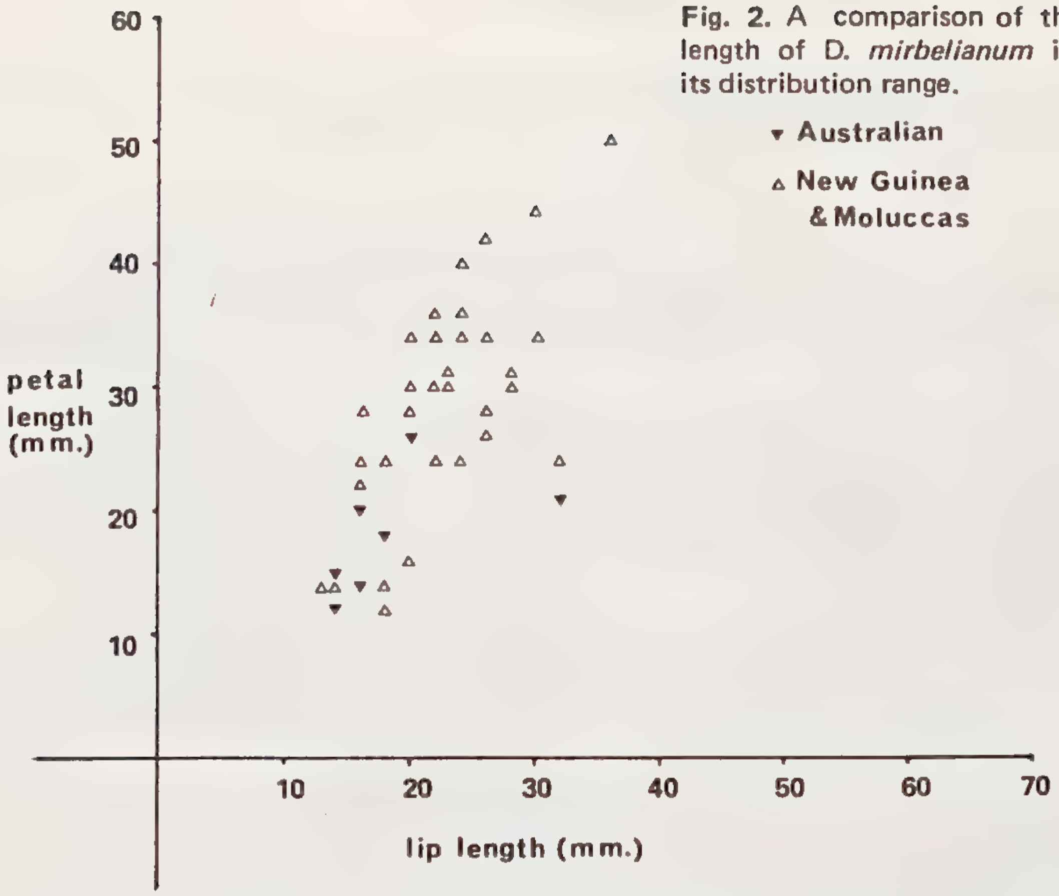

Fig. 2. A comparison of the variation in petal and lip length of D. *mirbelianum* in Australia and the rest of its distribution range.

- *D. rosenbergii* Teijsm. & Binnend. in Tijschr. Nederl. Ind. 24: 317 (1862). Type: Ambon, *Rosenberg* (type not seen).
- *D. polycarpum* Rchb. f. in Gard. Chron. 1883 (2): 492 (1883). Type: Sunda Islands (probably Moluccas), hort. Veitch (W. holo.!)
- *D. giulianettii* F.M. Bail. in Queensl. Agr. Journ. 3: 158 (1898). Type: New Guinea, Holdicott Bay, *Bailey* (BRI, holo.!; K, iso.!). Synon. nov.
- *D. aruanum* Kraenzl. in Engl. Pflanzenr. Orch.-Mon.-Dendr. 1: 242 (1910). Type: Aru Islands, *Beccari* (type not seen). Synon. nov.
- *D. wilkianum* Rupp in N. Queensl. Nat. 10 (67): 4 (1941). Type: Australia, Queensland, Babinda, *Wilkie* (NSW, holo.!).

Distribution. New Guinea, the Moluccas, the Bismarck Archipelago & N.E. Australia (Queensland).

In a recent article Ossian (1982) has suggested that twelve names should be sunk into the synonymy of *D. mirbelianum.* His assessment is based upon a consideration of the literature and living material in cultivation in the U.S.A. rather than upon examination of the Types and a range of natural source material. He has included all those names listed here in the synonymy of *D. mirbelianum,* except for *D. wilkianum,* but has also added several other names which, in our opinion, should be excluded. Thus, *D. prionochilum* F. Muell. & Kraenzl. and *D. robustum* Rolfe are both synonyms of *D. sylvanum* Rchb. f., while *D. montis-yulei* Kraenzl. is a species in sect. *Latouria* possibly conspecific with *D. terrestre* J.J. Sm. (Cribb in press).

He also follows J.J. Smith (1905) in considering *D. calophyllum* Rchb. f. conspecific with *D. mirbelianum.* Examination of the type and a drawing of the type in John Day's scrapbooks (4 Sept. 1867) indicates that the two are superficially similar. However, *D. calophyllum* does differ in having greener tepals, more reflexed sepals and a white lip veined with purple. The lip midlobe differs in being more elliptic or oblong with a subacute or shortly apiculate apex and a reticulate network of veins. The callus also differs in having all three ridges undulate and slightly raised towards the apex.

The type of *D. rimannii*, another name considered synonymous wth *D. mirbelianum* by Ossian, agrees well with that of *D. calophyllum* and must rather be considered conspecific with the latter. It is also figured by John Day in his scrapbooks of orchid paintings (10 July 1884).

Reinstatement of *D. calophyllum* to specific rank does not preclude a further assessment of its relationship with *D. mirbelianum* when more material of the former becomes available. Bearing in mind the frequency of natural hybridisation elsewhere in the section, such an origin for *D. calophyllum,* with *D. mirbelianum* as one parent, cannot be ruled out.

D. calophyllum Rchb. f., Xen. Orch. 2: 167 (1870). Type: ? Ambon or Timor, cult. *Day* W. holo.!), K, illn of holo.!)

- *D. rimannii* Rchb. f. in Gard. Chron. II: 680 (1882). Type: Moluccas, *Rimann* (W, holo.!)

Distribution: Moluccas only.

References

Cribb, P.J. (in press). A revision of *Dendrobium* sect. *Latouria* (Orchidaceae). Kew Bull.

Ossian, C.R. (1982). A review of the "antelope" dendrobiums (sect. *Ceratobium*) — Part 5 — subsection *Mirbeliana*. Amer. Orch. Soc. Bull. 51L 129-153.

Smith, J.J. (1905). Die Orchideen von Ambon, 56-57. Landsdrukkerij, Batavia.

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Dendrobium carronii —a New Species from Cape York Peninsula and New Guinea

by P.S. Lavarack* and P.J. Cribb†

Recently *Dendrobium carronii* was described in *Austrobaileya,* the journal of the Queensland Herbarium. As this journal is not readily available to the majority of the Australian Orchid public, we have prepared the following notes on this new species.

For some time now a small but very attractive orchid has been known as the "pink form of *Dendrobium canaliculatum*". In plant habit it resembles *D. canaliculatum* quite closely but there are some major differences in the flowers which have a yellow lip, white sepals and deep brown or purple petals which are pink-white at the base. The two authors, quite separately, came to the conclusion that this so-called "pink form" was a distinct species and, after some correspondence, it was described in *Austrobaileya* as *D. carronii.* The following is the full description as published in that journal:

Dendrobium carronii Lavarack and Cribb, *Austrobaileya* 1 (5) 497-501 (1982).

An epiphytic herb. Pseudobulbs purple, clustered, short and swollen about the middle, often almost globose, 1.5-5 x 1-3 cm. Leaves usually 2 but up to 4 at the apex of the stem, fleshy, almost terete, with a groove on the upper surface, up to 12 x 0.5 cm. Inflorescences suberect, one to 3 per pseudobulb, from the apical nodes; rachis purple, up to 20 cm long, 2-12 flowers. Bracts ovate, acuminate, 2 mm long. Pedicel and ovary purple about 2 cm long; ovary borne at about 90° to the pedical, minutely papillose. Sepals white, triangular, apiculate, 0.5 x 0.3 cm. Petals dark brown to purple with a white base and a darker stripe running the length of the petal, oblanceolate, acute, twisted once, 1.8-2 x 0.2-0.3 cm. Lip prominently 3-lobed, 1-1.4 x 0.7-0.8 cm; mid-lobe oblong acute, sidelobes erect to spreading, rounded; callus of 3 poorly-developed ridges scarcely reaching the midlobe. Column 0.3 x 0.2 cm., denticulate on the apical margin with 2 small, erect apical teeth; foot 0.5 cm long, mentum pointing backwards more or less parallel to the column. Anther papillose in front, shallowly notched at the base.

The flowering time is August to October.

This species is closely related to *D. canaliculatum* R. Br. and indeed the two species are difficult to separate when not in flower. *D. carronii* is usually more purple in its vegetative parts than *D. canaliculatum.* The major differences lie in the flowers. These differences are shown in the table given below:—

	D. carronii	*D. canaliculatum*
Sepals	triangular, half as long as petals, not twisted, apiculate	linear, as long as petals twisted, acute
Lip	yellow, midlobe oblong, straight	white with purple markings, midlobe ovate to almost circular.
Callus on lip	low, scarcely reaching midlobe	about 1 mm high, reaching to near the apex of midlobe
Mentum	approximately parallel to column	at an obtuse angle to column
Point of attachment of lip	about halfway between base of column and end of mentum	near end of column foot
Column	purple with white anther	yellow

D. carronii has been named in honour of William Carron (1823-1876) botanist to the ill-fated Kennedy expedition of 1848, who passed through the area where this species grows and may well have been the first to collect it. Carron was one of three survivors of this expedition, but his specimens were not recovered by the rescue party.

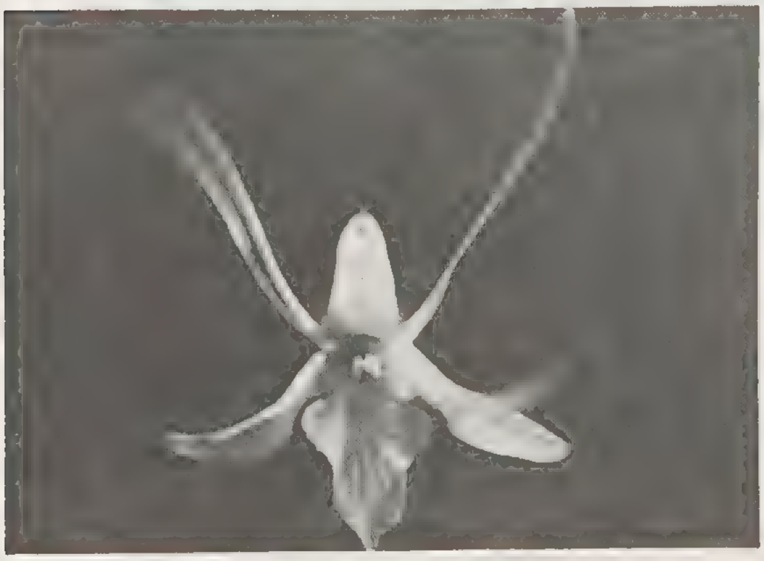

Fig. 1. *Dendrobium carronii*

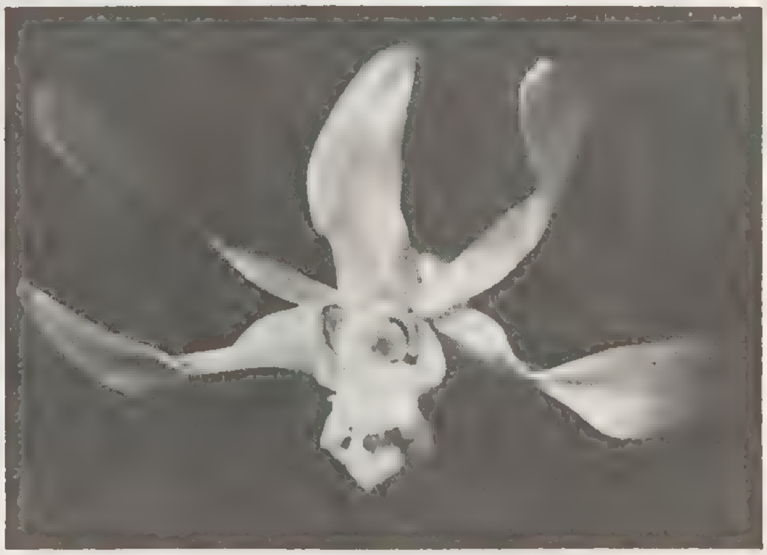

Fig. 2. *Den. canaliculatum var. nigrescens*

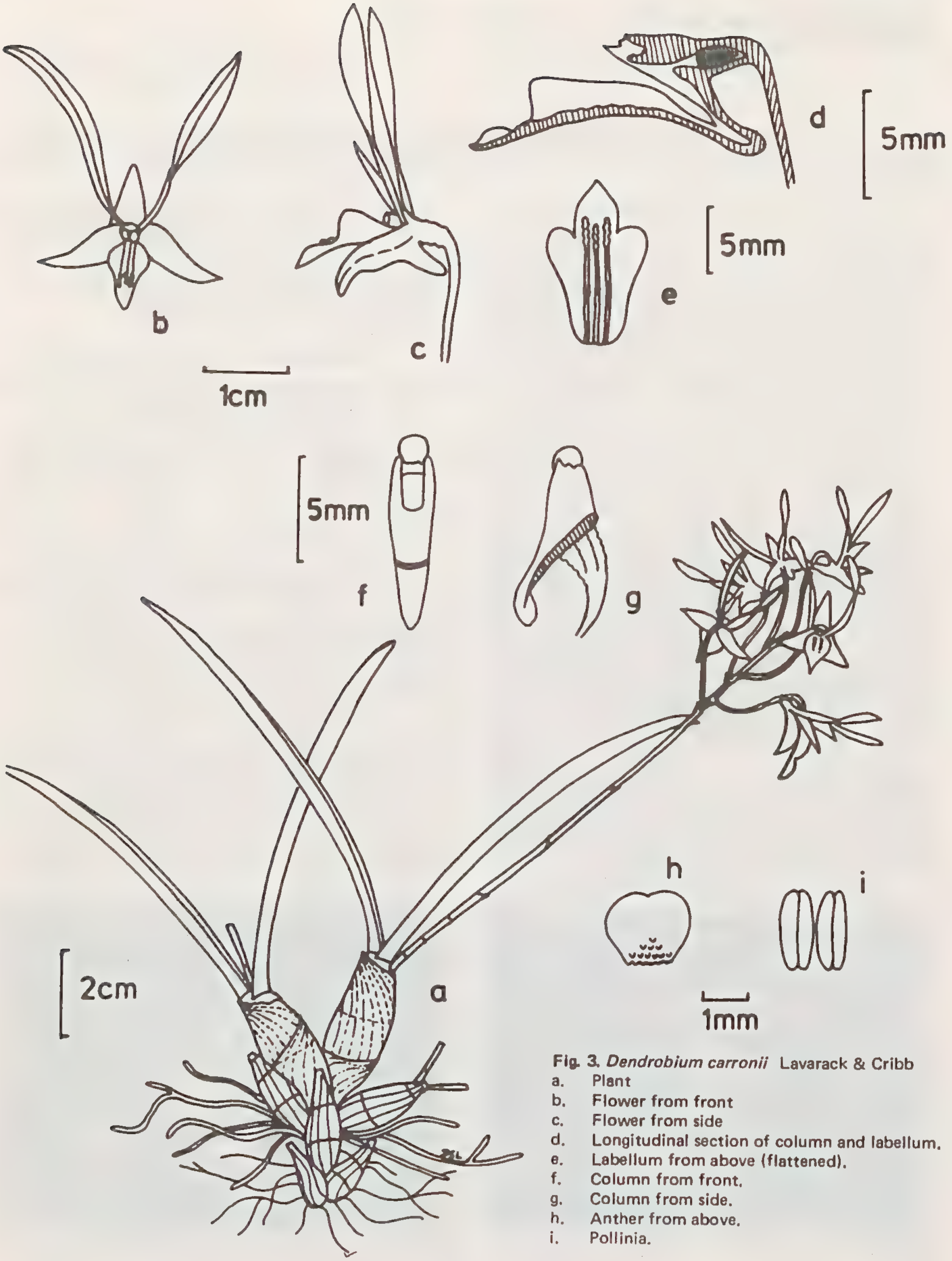

Fig. 3. *Dendrobium carronii* Lavarack & Cribb
a. Plant
b. Flower from front
c. Flower from side
d. Longitudinal section of column and labellum.
e. Labellum from above (flattened).
f. Column from front.
g. Column from side.
h. Anther from above.
i. Pollinia.

Distribution and Habitat

This species appears to have been first collected at Lankelly Creek near Coen and has subsequently been reported at Massy Creek, Tozer's Gap and at the upper Jardine River area. All these localities are on eastern Cape York Peninsula in areas of year-round high humidity. It has not been observed in the central and western parts of the Peninsula which suffer a regular seasonal drought. It has been recorded from sea level to 500 m and grows in moister open forests and swamp forests often on papery-barked trees. Common host trees are various species of *Melaleuca* and *Tristania suaveolens.*

Dodd (1976) described a distinctive form of *D. canaliculatum* from Hula in the Central District of Papua New Guinea. From his description there is no doubt that this is identical with *D. carronii.*

Sectional Classification

Dendrobium canaliculatum, which is undoubtedly closely-related to *D. carronii,* has usually been placed in the section *Eleutheroglossum*. However, the flowers of both species clearly are similar to those of species in the section *Ceratobium* and the present authors, in *Austrobaileya,* transferred both species to this section. Full details of the reasons are given in *Austrobaileya.*

Also given in that journal is a key to the members of the section occurring in Australia. This is repeated here with the permission of the Editor of *Austrobaileya.*

Key to the Australian species of Dendrobium sect. Ceratobium.

1. Leaves fleshy, almost terete with a groove on the upper surface 2
1. Leaves flat, coriaceous or subcoriaceous, never terete 3
2. Mentum pointing backwards ± parallel to the column; callus on lip of three poorly developed ridges; mid lobe oblong, straight; sepals white, petals purple or dark brown; lip yellow . . . . *D. carronii*
3. Mentum at an angle of c. 90° to the column; callus ridges on mid-lobe c. 1 mm high; mid-lobe ovate to almost circular, somewhat recurved; sepals and petals yellow or brown-tipped; lip white, marked with purple . . . . *D. canaliculatum*
3. Inflorescence with sheathing bracts; pedicel emerging from a few mm above the bract axil; flowers white with green petals and marked with violet or purple on the lip. . . . . *D. antennatum*
3. Inflorescence with ovate or lanceolate spreading bracts; pedicels emerging from the axils of the bracts; flowers mostly yellow, brown or purple 4
4. Petals and sepals undulate and crispate on margins often markedly so; bracts often 1 cm or more long. . . . . *D. discolor*
4. Petals and sepals with smooth entire margins; bracts mostly less than 5 mm long. 5
5. Flowers predominently purple or lilac; lip mid-lobe transversely elliptic truncate; mentum mostly more than 1 cm long . . . . *D. nindii*
5. Flowers yellow, brown or ochre, ± marked with purple veins on the lip; lip mid-lobe ovate to broadly ovate, acute or obtuse; mentum less than 9 mm long. 6
6. Lip mid-lobe ovate or narrowly ovate, acute, purple-veined with undulate margins; callus of 5 continuous undulate ridges; side lobes with rugulose venation; flowers mostly self pollinating; leaves oblong-elliptic, obtuse. . . . . *D. mirbelianum* (syn *D. wilkianum)*
6. Lip mid-lobe broadly ovate, obtuse, with flat margins; callus of 3-5 ridges rather discontinuous and raised on mid-lobe; side lobes lacking rugulose venation; flowers cross-pollinating; leaves linear or linear-lanceolate, acute to sub-acute 7
7. Mentum pointing backwards in flower; lip elliptic in outline; mid-lobe narrower than side lobes when spread; petals dark purple to brown . . . . *D. johannis*
7. Mentum straight, not noticeably curved backwards; lip oblong in outline; mid-lobe as broad as side lobes when spread; petals ochre-yellow ± veined purple . . . . *D. semifuscum*

References

Dodd, J. (1976) *Dendrobium canaliculatum* from Hula, Central District, Orchid Soc. Papua New Guinea Newsletter. Feb. 1976: 17-20.

Lavarack, P.S. and Cribb, P.J. (1982). A New Species of Dendrobium from Cape York Peninsula and New Guinea. Austrobaileya 1 (5) 497-501.

12 May, 1983

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CULTIVATION BASED ON HABITAT OBSERVATION – VI *Sarcochilus australis*

by Michael Harrison

In 1972, whilst honeymooning on the N.S.W. South Coast with my newly acquired, unsuspecting wife (oh, the joys of tramping through leech infested forests in search of that illusive *Sarcochilus falcatus* etc.), I came across my first colony of *S. australis*, growing quite prolifically in a protected gully off one of the tributaries of the Clyde River. On the rocks above the creek I saw *Dendrobium speciosum* and *D. linguiforme*, and, in the trees alongside the *S. australis*, *S. hillii* also flourished. Although my thoughts were predominantly occupied elsewhere at that time, I did have the presence of mind to spend an hour or so in the area, observing these plants in their environment and assessing their growing conditions.

Like most of the orchids I was growing at the time, I figured it would not be too difficult to find a position in my bush house suitable to *S. australis* and the result would be, of course, a plant that would grow and flower in cultivation for years. A tree fern fibre slab was chosen as the host (in retrospect, a poor choice, but ten years ago, everthing went on to tree fern) and, after wiring the plant firmly into position, it was watered and hung up on the mesh forming the southern wall. In October it flowered and the following March it died. How could this have happened I asked myself. The *S. olivaceus* growing beside the deceased looked healthy and everything else looked well enough. I did a bit of asking around and everyone I spoke to, and even the books to which I referred, told me the same thing: a very difficult orchid to grow for any length of time; not responsive to normal cultural techniques: not really worth all the trouble. So I did the only decent thing and forgot about *S. australis*.

A couple of years later I was given two more plants. Remembering my earlier disaster and attributing this failure to the tree fern slab, I decided to try a different kind of host; so I tied these two on to an old piece of hardwood fence paling. This time the results were much more encouraging. Almost immediately they began to produce roots which slowly made their way across the slab, snaking up over the top and around the sides. Several new leaves were produced, each larger than its predecessor and, in spring, as the flowers opened on the long, pendulous racemes, I really fell under the spell of *S. australis*. But alas, long-term success still eluded me, for within eighteen months both of these plants had also become casualties of my attempts to grow them. This time I did not just give up and forget about it. I decided that I had now become an experienced exterminator of this lovely orchid and I wanted to know why. To begin with, it was obvious that none of them had fallen victim to insect or fungus attack; some environmental factor had killed these plants and, thinking back, I was able to identify two different and separate problems.

My first plant had died from the centre outwards, leaving the roots still plump and viable whilst the leaves turned yellow and dropped off over a period of only a couple of days. Although this plant had never produced much in the way of roots due, I now believe, to the constantly damp, acidic nature of the tree fern fibre, those which it did possess did not degenerate for some time; and I remembered thinking that perhaps a new keiki might arise from the old stem. This, of course, did not happen and the roots eventually did dry out and die.

Conversely, the other two plants on the hardwood slab behaved quite differently and, in fact, the opposite seemed to have occurred. The first hint I had that anything was amiss was the collapse of a couple of the growing root tips. In most cases this was a progressive condition with the affected roots slowly collapsing or shrivelling along their entire lengths right back to the stem of the plant. Occasionally this collapse came to a halt, sometimes only a few centimetres from the dead root tip, and the root was able to initiate another growing tip; but in most cases this did not occur and, overall, more roots died than regenerated. Slowly but surely, the plants began to show signs of stress. The leaves lost their plump, healthy appearance and became leathery and somewhat wrinkled. Attempts to produce new roots were invariably unsuccessful, with the root tips shrivelling after only one or two centimetres of growth. As more and more of the mature roots dried back, the condition of the plants became obviously terminal, until the leaves eventually dehydrated completely and dropped off. These plants had starved to death due to root loss and the resultant cutoff in supplies of water and nutrients.

The Mangrove Mountain Dam Site, west of Gosford, N.S.W., provided my next specimens of *S. australis* when, during 1979, ANOS Sydney Group was granted permission to remove orchids from the areas to be flooded. Although they were not really very common in the area, I was able to collect about thirty plants from two separate colonies along Boomerang Creek. More than half of these were either seedlings or unflowered young adult plants. Now I was in a position to really experiment. I was most interested in the seedlings and juvenile plants, for it would be these, I believed, which would prove the most valuable in terms of assessing growing conditions and techniques. I used several different hosts, pressed cork, natural cork, hardwood slab and paperbark, distributing the plants more or less evenly, between these hosts, and mounting two or three plants, grouped together, on each. I positioned all of these hanging under the benches in a bush house with fibreglass walls and ninety percent shadecloth on the roof and then watched as they grew. Conditions in this bush house were well suited to Sarcanthinae species, with a cool, humid atmosphere being maintained at all times and a good airflow throughout. Watering was regulated by prevailing weather conditions, but was carried out every couple of days on average. Without doubt, those plants on cork performed best, and the pressed cork was slightly better than the natural cork. Within six months there were roots going in every direction, even straight out into mid-air. I was particularly surprised at the speed with which the plants increased in size. Several of them had been very small seedlings, with leaves less than ten millimetres in length, and these in particular had grown in leaps and bounds. Within twelve months some of these had produced leaves between four and five centimetres long, and others, which had been more advanced, were coming into spike. They flowered in due course, producing an excellent display for a first flowering.

At this time another, parallel, experiment was also being conducted with some of the Mangrove Mountain plants. About half a kilometre from my home there is a beautiful little gully full of Scrub Myrtle *(Backhousia myrtifolia)*, one of the natural hosts of *S. australis*. Although I am generally against the practice (think of the poor botanists in years to come) I could not resist tying a few plants on to branches overhanging the creekbed in much the same positions as *S. australis* often occurs naturally. These plants also grew very well, not nearly as rapidly as those in the bush house, but nevertheless, two of them flowered last year for the first time. I attributed this disparity in time taken to reach maturity to the increased watering and feeding under cultivation as compared to natural conditions; and indeed conditions in that gully (natural conditions) are considerably more rigorous than those in the bush house. At certain times of the year, especially during spring (usually the driest time of the year in Sydney), many weeks may go by between falls of rain. During these times, and in fact throughout the year, plants existing in the wild are sustained, to a large extent, by moisture deposited in the form of dew, and by consistently high levels of humidity. I do believe that many epiphytic orchids could survive without any rain as such. Until March this year, when we at last received some good falls, the rainfall in the area where I live had been very low and we had recorded virtually nothing since the previous winter. I had expected some decline in the condition of orchids in the bush house, especially during the heat of the summer, but the opposite seemed to happen. A colony of *S. australis* only five minutes up the road showed absolutely no ill effects and, if anything, the plants' roots appeared to be growing more vigorously. *D. speciosum* produced an excellent crop of new pseudobulbs, not stunted or reduced in any way; likewise, the new leaves of *D. linguiforme* were thick and succulent.

Comparing the results between these "natural" plants and those growing in cultivation proved interesting. The bush plants, although they grew slower, produced more extensive root systems than their counterparts in the bush house. Their roots also suffered much less from the die-back or shrivelling I described earlier, a condition which affects many Sarcanthinae species in cultivation to a greater or lesser extent, especially those species which are truly epiphytic. Even when plants in cultivation are growing well, they still tend occasionally to lose a root or two in this manner. As long as it does not become excessive, this is not really a serious problem and can be avoided by a slight reduction in the frequency of watering, although once roots have become shrivelled they cannot recover. Apart from root die-back, a plant will indicate that it is receiving too much water by aerialising some or even all of its roots. These roots leave the host and grow out into mid-air in an attempt to achieve even faster drying after watering. This may not be a problem as such, and may even look attractive in some species, but it does indicate that care must be taken. Some species, of course, aerialise many of their roots under normal circumstances, *Plectorrhiza tridentata* and *Pteroceras spathulatus* probably being the two most obvious.

The other major ailment of *S. australis,* leaf shedding, is a condition that is usually fatal in this species. It is not uncommon to hear a grower recounting how he walked into his orchid house one morning to find all the leaves from a plant of *S. australis* lying on the ground beneath the plant. Occasionally, not all of the leaves are lost and the plant may recover, but this is not usually the case. In some other species, shoots may appear from the sides of the denuded stem and one or two of these will grow into new plants, but I have never seen this happen with *S. australis.* Less than ideal environmental conditions within the orchid house appear to be responsible for this ailment. Consistently low levels of humidity, in particular, are probably the main cause and this, combined with excessive direct watering, especially during warm weather, may prove too much for the plant to withstand. It should be remembered that S. *australis* is quite able to withstand long periods of dry weather. It is always tempting to water plants more often when the weather is warm and dry, and many orchids require this kind of treatment, but with this species it is safer not to water if in any doubt.

THE HABITAT

S. australis is a temperate species occurring predominantly south of the Hunter River system in central N.S.W. It has been recorded from areas further north (see *Orchadian* Vol. 1 No. 5 for one such recording), but is, apparently, often confused with *Pteroceras spathulatus,* a species which bears a superficial resemblance to *S. australis.* I am unfamiliar with its occurrence in Tasmania (where it is commonly known as Gunn's Orchid) but on the mainland it tends to occur near the coast and on the coastal ranges. It is usually encountered growing on trees along watercourses, where it forms colonies which may contain hundreds of mature individuals (flowering size), although something less than one hundred would probably be average. Some colonies I have seen comprise less than a dozen mature plants but it is possible that these are still in the early stages of development. Colonies of *S. australis* invariably contain many more seedling plants than adult plants and, at times, developing protocorms and seedlings may be seen in their hundreds on twigs and small branches. Of course, not all of these seedlings attain maturity, and I imagine that once a colony reaches the full extent of its development, it will remain in a state of equilibrium, although it may fluctuate with the overall wet/dry weather patterns. Many seeds actually appear to germinate and grow on dead branchlets and a large proportion of these are doomed to an early death, as the brittle wood snaps and falls to the ground long before maturity is reached. Even when germination takes place on living wood, the situation may become precarious, for *S. australis* usually prefers the outermost twigs and small branches of the host tree. These twigs are quite prone to die-back and many a mature plant has found itself attached to deadwood after some years. At least one of the major hosts of *S. australis*, the River Gum *(Tristania laurina)*, has flaky bark which is regularly shed in more or less circular pieces. Plants of *S. australis* are often seen hanging by only one or two roots, and unless a new attachment can be achieved, these plants are destined to end up on the ground or in the water. The biggest plants of *S. australis* are usually situated on the main trunk or laterals of the host tree, where they live for many years, producing extensive root systems which may extend for metres in either direction. This demonstrates the apparent anomalous habit of this orchid: it grows more securely and reaches its best development on the more substantial parts of the host tree, but tends not to germinate nearly so readily on these parts, preferring the outermost twigs and branchlets, where its life expectancy is considerably reduced.

THE HOSTS

S. australis is very particular about where it grows and colonies are often restricted to just one small portion of what may appear to be an ideal habitat. At times, I have been completely unable to understand why a particular colony is so restricted, for quite literally, one is often able to step into, and, at the other end, step out of a colony of this species. There seems to be no appreciable change in vegetation; there is no discernible difference in the levels of light; the degree of shelter from extremes of weather is unchanged, and yet, as if an invisible barrier exists, the borders of the colony are rigidly maintained. Some colonies may extend along a creek for a hundred metres or so, whilst others occur in an area no larger than an average living room, but all have one feature in common: they exist as a collection of individuals dependent upon one another to maintain the vitality of the colony as a whole.

Apart from Water Gum, the other major host of *S. australis* is the Scrub Myrtle. This tree tends to occur in somewhat drier situations than the Water Gum, which prefers to grow with its feet permanently in the water. Many myrtle gullies dry out completely at times, being reduced to just a couple of small pools during dry periods. However, this lack of permanent water does not affect the well-being of *S. australis*. In fact, it appears to be an irrelevant factor, for it grows equally as well in these seasonally dry gullies as it does when situated over permanently running water. Unlike many other orchids, *S. australis* will not tolerate marginal conditions; it either grows well or not at all. I believe that there are two major environmental factors which determine the suitability of an area and upon which *S. australis* is dependent. Firstly, the light intensity must be adequate, for *S. australis* will generally not grow in dark or dull positions and requires a fairly bright situation. The second factor is the "atmosphere", which is really a combination of factors: air movement, humidity and temperature. Along the creeks and gullies where this orchid grows, the air is always moving, the humidity is relatively high and the temperature is more moderate than surrounding areas. On a hot day the temperature may vary 5°C or 6°C between the creek side vegetation and the adjacent hardwood forest. The humidity also is usually considerably lower out in the open forest. Likewise, the amount of air movement is noticeably reduced. Old time growers attempted to create an ideal orchid house atmosphere which they described as "buoyant". This atmosphere embodied the above factors, and as an ideal, is as valid today as it was in those earlier days. One other factor which may also be significant is the fact that *S. australis* grows best on living wood, not deadwood, although, as previously mentioned, for some reason it germinates freely on dead branches and twigs. These seedlings seldom attain maturity, becoming stunted and sluggish after their initial burst of active growth. Some adult plants are seen on dead branches but these are nearly always plants which matured while the host branch was still alive. Once the branch dies, these plants usually regress and eventually die.

As a characteristic of epiphytic orchids generally, their obvious preference for a living host becomes an important consideration for growers. It is impractical for us to use living trees as hosts, especially if we intend to transport our plants to meetings or shows. and yet observation of orchids in the bush tells us that they are usually intolerant of a dead host for any length of time. I suppose that the relatively sudden exposure to strong light caused by leaf loss on dying trees is a major factor contributing to the demise of many orchids in this situation but this is by no means the full explanation. Even in positions where such orchids are not subject to markedly increased levels of light, they still do not seem to survive for very long. It may be that living wood is able to keep the orchid roots cooler than deadwood, or, perhaps, the bark of living wood provides some slight amount of moisture. I do not know what it is but the results are obvious. In cultivation, we use artificial hosts upon which to grow epiphytic orchids. These are generally natural substances but are artificial in the sense that they are not the orchid's natural host. In spite of these being "non-living" hosts, excellent results are achieveable if attention is given to, initially, the choice of host and the continuing treatment of the plant on that host. As a truly epiphytic species, *S. australis* prefers to have its roots completely exposed to air. Other species, such as *S. falcatus* and *S. olivaceus*, do not object to their roots penetrating deeply into the layers of epiphytic mosses and ferns on host limbs, but *S. australis* will not grow in such situations and prefers more spartan conditions. Where their ranges overlap, it often grows in association with *S. hillii*, a species which also dislikes too thick a moss layer on host branches. At times, however, some plants of both species are seen with their roots passing through mossy areas, especially on the more substantial parts of the host tree.

I am quite convinced that the key to the successful cultivation of *S. australis* lies in the health of the root system, and, that in turn, the health of the root system is dependent upon watering. Once a plant is established in cultivation, watering should be reduced. *S. australis* is relatively easy to establish, requiring only a couple of months to get its root system growing strongly. After this stage has been reached, ease back on watering and let the roots really start looking about for moisture. If water is too readily available, there is no stimulus to produce a good root system and the plant will become "soft", being unable to withstand even slightly adverse conditions. I seldom directly water my established plants of *S. australis,* allowing them instead to get splashed as I water other plants. Recently I have been particularly pleased with results I have achieved using weathered bamboo as a host. The bamboo pieces are between three and four centimetres in diameter and about sixty centimetres in length. They were well aged, having been used as garden stakes for several years, and are the same shade of grey as palings on an old hardwood fence. Even when this bamboo gets completely wetted, it dries out very quickly and I suspect that the hollow segments give it a stability other hosts may lack.

S. australis is one of our most attractive orchids, and although considerable difficulties are often encountered in cultivation, persistence will be rewarded. Horticulturally, one of its best features is the longevity of the flowers, and three to four weeks in full bloom can be expected. I have seen large specimens with flower spikes up to twenty-five centimetres in length and to see a whole colony in bloom is an experience not quickly forgotten.

Worthy of note is W.H. Nicholl's description of *S. australis* and its habitat in "Orchids of Australia." Here he describes the species as it occurs in the Dandenong Ranges, near Melbourne. Clemesha and Upton's "A *Sarcochilus* Problem" (*Orchadian* Volume 1, No. 3, page 32) is an interesting reference, as is "Observations on Epiphytes in N.S.W." by D.L. Jones (*Orchadian*, Volume 4, No. 5, pp.45-46). It would appear that the range of host trees is greater in Victoria, and also probably in Tasmania, than is the case in N.S.W. In this state, *S. australis* occurs predominantly on Scrub Myrtle and Water Gum, although on a few occasions I have seen it on other trees, *Trococarpa laurina, Pittosporum undulatum* and *Ceratopetalum apetalum,* as well as two species of *Ficus, F. rubiginosa* (Rusty Fig) and *F. coronata* (the Creek Sandpaper Fig). It has a reputation for being scarce in N.S.W. which really is unwarranted for in some places it is a common orchid.

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May, 1983

DENDROBIUM GEOTROPUM T.M. Reeve A NEW SPECIES IN SECTION *LATOURIA* FROM PAPUA NEW GUINEA

by T.M. Reeve

Dendrobium geotropum T.M. **Reeve** *sp. nov.* **simile** *D. mayandyi* **Reeve et Renz sed habitu geotropo plantae, foliis non-patentibus maioribus petalis latioribus, forma subcordata labelli expansi et eius callo triporcato, differt; flores illis** *D. pachysteles* **Schltr similes sunt sed caulibus crassioribus multo ferentibus 2-3 folia ad apicem, inflorescentiis terminalibus longioribus, colore viridi et purpureo florum et forma labelli, species nova differt.**

Description- A medium to large epiphytic *herb* growing downwards (geotropic), up to 60 cm long. *Roots* thick, flexuous, glabrous, white with greenish tips, up to 4.5 mm diameter. *Rhizomes* extremely short. *Pseudobulbs* thick, clavate with slender basal section somewhat moniliform, dilated apical section becoming shallowly grooved with age, yellowish brown to dark brown, ± shiny, approx. 8 nodes, 5-27 x 0.8-3.0 cm, new stems covered with white scarious bracts and bearing 2-3 leaves at the apex (small plants may be 1-leaved). *Leaves* large in relation to the stems, pointing downwards, occasionally spreading at the apices, ovate-elliptic to lanceolate, acute, glabrous, leathery, mid- to dark-green sometimes suffused with purple, 6-24 x 1.8-5.5 cm. *Inflorescences* terminal, pendulous, often partly enclosed by the leaves, 3-12 flowered; *peduncle* 3-18 cm long; *rhachis* 2-14 cm long; *bracts* obovate — spathulate, concave, subacute c. 6-8 x 5 mm. *Flowers* medium-sized for section, fleshy, glabrous, not usually widely opening, quite variable in size even on the same inflorescence, c. 15-25 mm across; tepals pale green with outside of sepals sometimes spotted/suffused purple, labellum dark purple except for large white callus and the underneath midline which is green near the apex and whitish near the base, lasting several weeks at least, not scented. *Dorsal sepal* oblong-ovate, obtuse, 14-19 x 8-9.5 mm; *lateral sepals* obliquely triangular, acute, 15-19 x 10-12 mm at the base forming a blunt mentum 6-8 mm long. *Petals* rhombic-elliptic, acute, 15-18 x 7-9 mm. *Labellum* hinged, slightly trilobate, with prominent median callus of 3 parallel ridges c. 7-7.5 x 3 mm, oval in shape with small sidelobes and midlobe margins incurved (subcordate when expanded), 13-14 x 7-9 mm (up to 14 mm wide when expanded). *Column* typical of section except stigmatic area which is proportionately larger than most species, whitish with slight purplish colouration below stigma, 4-4.5 x 4 mm; *column foot* green at base, 5.5-7 mm long; *anther* cucullate, greenish-white, 2-2.5 x 2-2.5 mm; *pollinia* golden-yellow, 4 in 2 pairs, c. 1.25 mm long. *Ovary* green to purple, 6-grooved; *ovary/pedicel* 10-18 mm long. *Fruit* commonly seen in nature, c.5-6 x 2.5 cm, with seed orange-yellow.

Holotype: Papua New Guinea: Western Highlands Province, Tambul District, Tomba, 2700-2850 m, February 1983, *Reeve* 1044 in LAE.

Local Name: Kalapu.

Isotypes: AMES, CBG, E, K, L, NSW.

Distribution- *D. geotropum* has so far been collected in the Enga, Western Highlands, Southern Highlands and Morobe Provinces of P.N.G. from approx. 2000 to 2850 m. Possibly it occurs lower than this but there is some doubt about the exact altitude of origin of the 2 earliest specimens from Nondugl. Apart from the Type material and LAE 74489, the other 3 collections are only represented by flowers in spirit so this species has not been described hitherto. The details of the other collections in herbaria are as follows:

Western Highlands Province: Minj District, Arl River via Nondugl, 5-7000 ft, March 1957, *L.M. Mason* 167 (K); 5000 ft (?), March 1961, *G.H. Slade s.n.* (K).

Southern Highlands Province: Ialibu District, Southern slopes of Mt Giluwe (via Iombi), 2800 m, October 1979, *Reeve* 326 (K, LAE).

Morobe Province: Wau District, Bulldog Road, (near Wau Ecology Institute Camp No. 2), 2800 m, November 1979, *K. Kerenga* LAE 74489 (LAE).

Notes: *Dendrobium geotropum* is similar in appearance to *D. mayandyi* Reeve & Renz but differs in the geotropic habit of the plant, in the larger non-spreading leaves, in the wider petals, the subcordate shape of the expanded labellum and its 3-ridged callus. The shape of the flowers is similar to those of *D. pachystele* Schltr. but the new species differs in the much thicker stems which bear 2-3 leaves at the apex, in the longer terminal inflorescences, in the green and purple colour of the flowers and the shape of the labellum.

In 1976 and 1978 a number of small plants of *D. geotropum* were collected on the southern slopes of Mt. Giluwe at the logging site of a local sawmill. These plants were found on felled *Papuacedrus* trees and thus it was not observed that this species grew downwards — contrary to the habit of all other large-stemmed members of section *Latouria*. However this peculiarity was later seen on the growth of new shoots in the collection at Laiagam and it was something of a nuisance, especially with potted plants. All of these small plants eventually died.

In 1981 Mr Peter Ken, the gardener at Kaiap Orchid Lodge, showed me a large plant which he had collected on the Tomba Pass which is on the main highway between Wapenamanda and Mt Hagen town. As a result a visit was planned to that area in February 1983 in order to collect material for a satisfactory Type set. Following the marked dry season in 1982 it was expected that this species should be in flower about this time. In 1½ days searching we were able to collect 10 medium sized plants and 2 very large plants, one of which was in flower (illustrated) and several others in bud. The largest plants were found as epiphytes on *Pandanus* trees and all were growing downwards. Incidentally the only other *Latouria* species which we saw was D. *rigidifolium* Rolfe (on *Nothofagus* trees), although *D. simplex* J.J. Sm. has also been recorded from the area.

Most of the plants collected on this visit were pressed to make a good Type set of 7 duplicates, but a few are now being cultivated at Laiagam — this time correctly mounted upside down! Hopefully, at a future date, more information will be available on the cultivation of this interesting species. The green and purple flowers are quite attractive, especially the larger, more widely opening forms.

Acknowledgements: I wish to thank Mr Jeffrey Wood for providing some details on the Kew collections, Mr Joe Betts for his help with the Latin diagnosis, and especially Mr and Mrs Lindsay Mackney of the Tomba Sawmill, P.N.G. for their hospitality during our two days collecting in that area.

March 1983

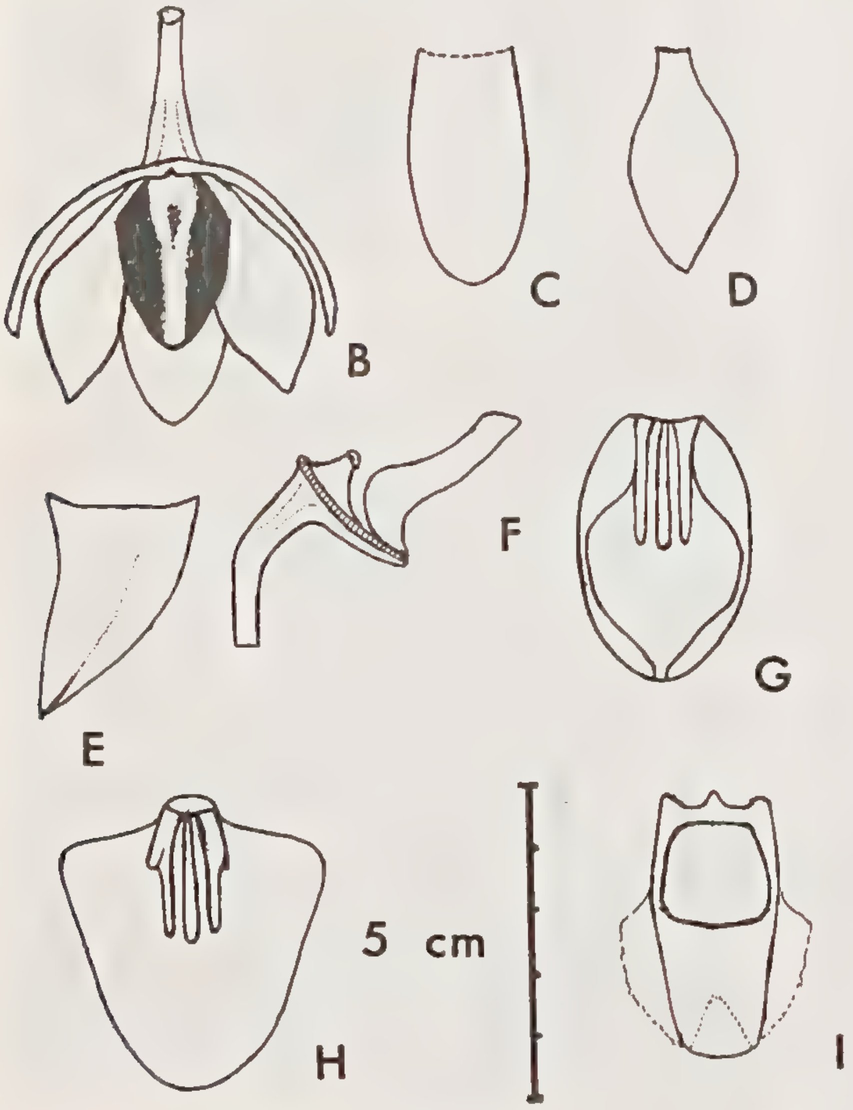
Dept. of Primary Industry
Laiagam
Enga Province
Papua New Guinea

Fig. 1

Dendrobium geotropum Drawn from the Type (*R.* 1044) by T.M. Reeve.

- a. Large plant showing the typical habit of this species
- b. Flower (ventral view)
- c. Dorsal sepal
- d. Petal
- e. Lateral sepal
- f. Pedicel/ovary/column/labellum
- g. Labellum (Top view)
- h. Labellum (expanded)
- i. Column

a to indicated scale (drawing on right)
b to f to indicated scale (below) x 2;
g, h to scale x 3; i to scale x 5.



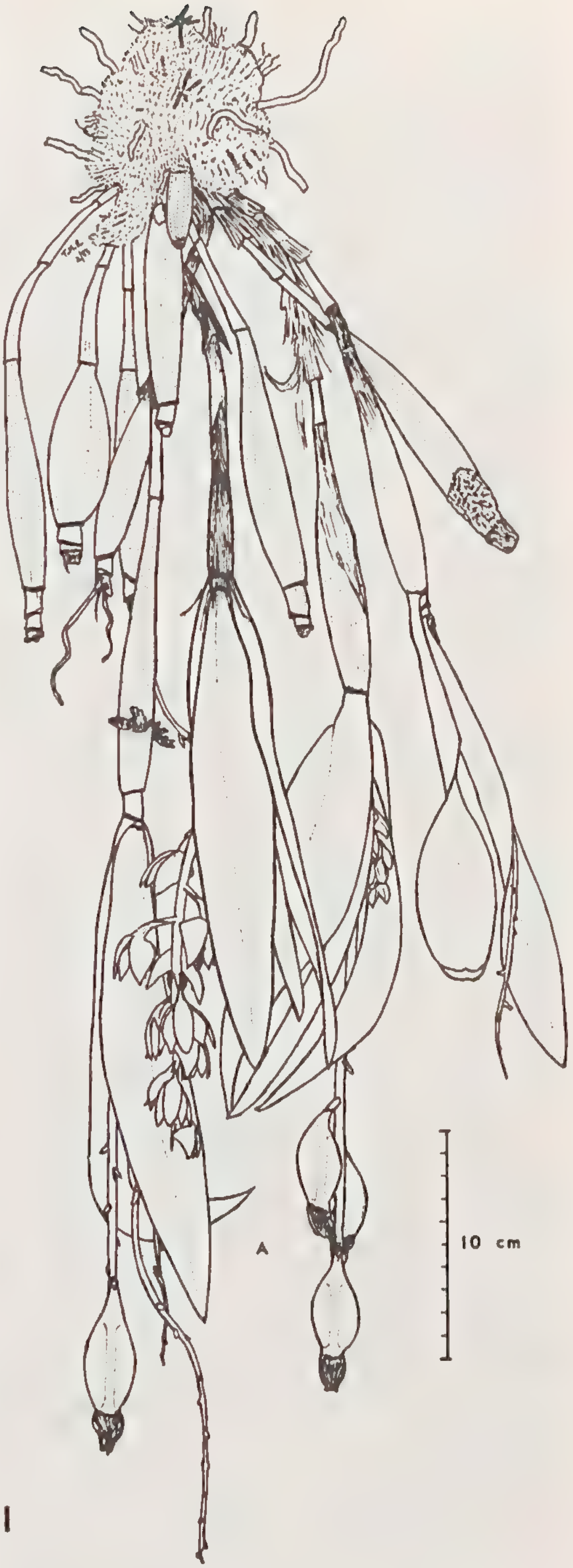
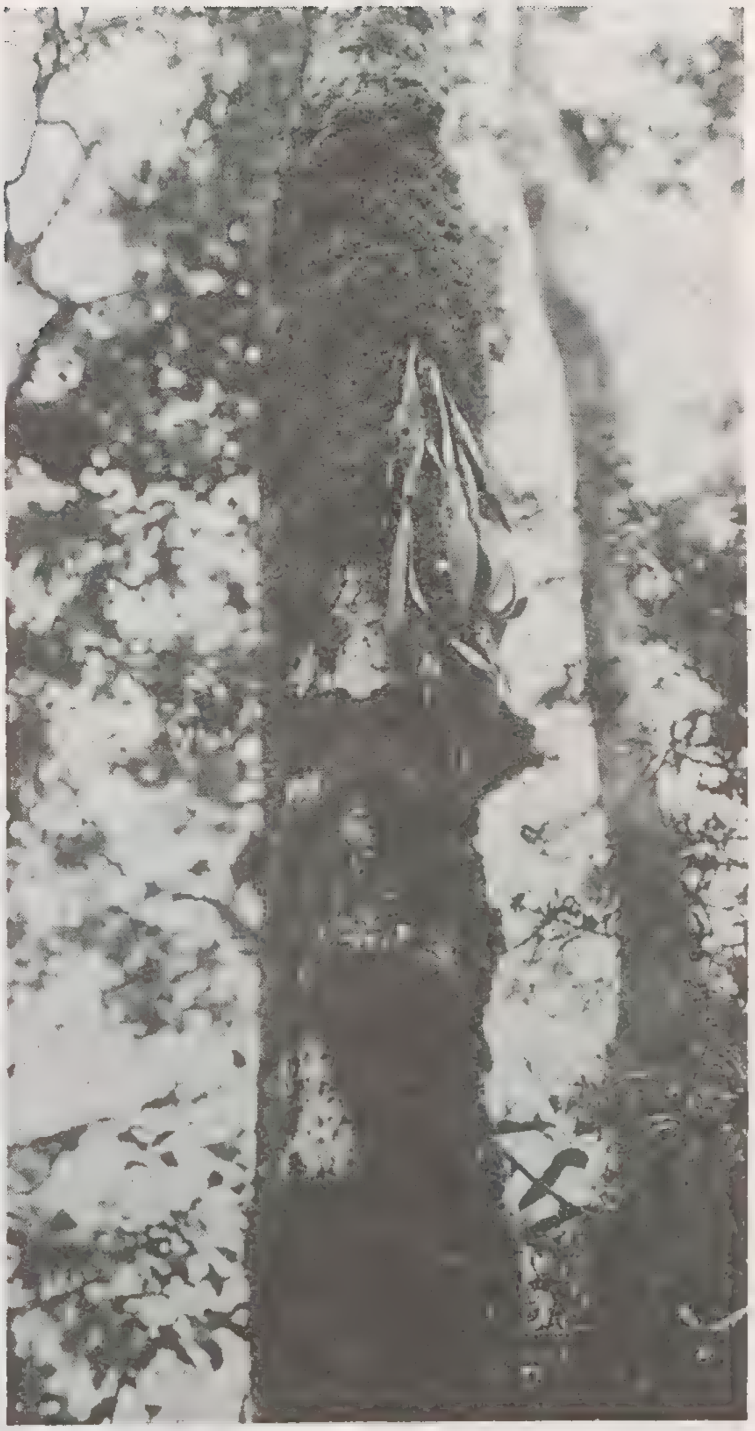
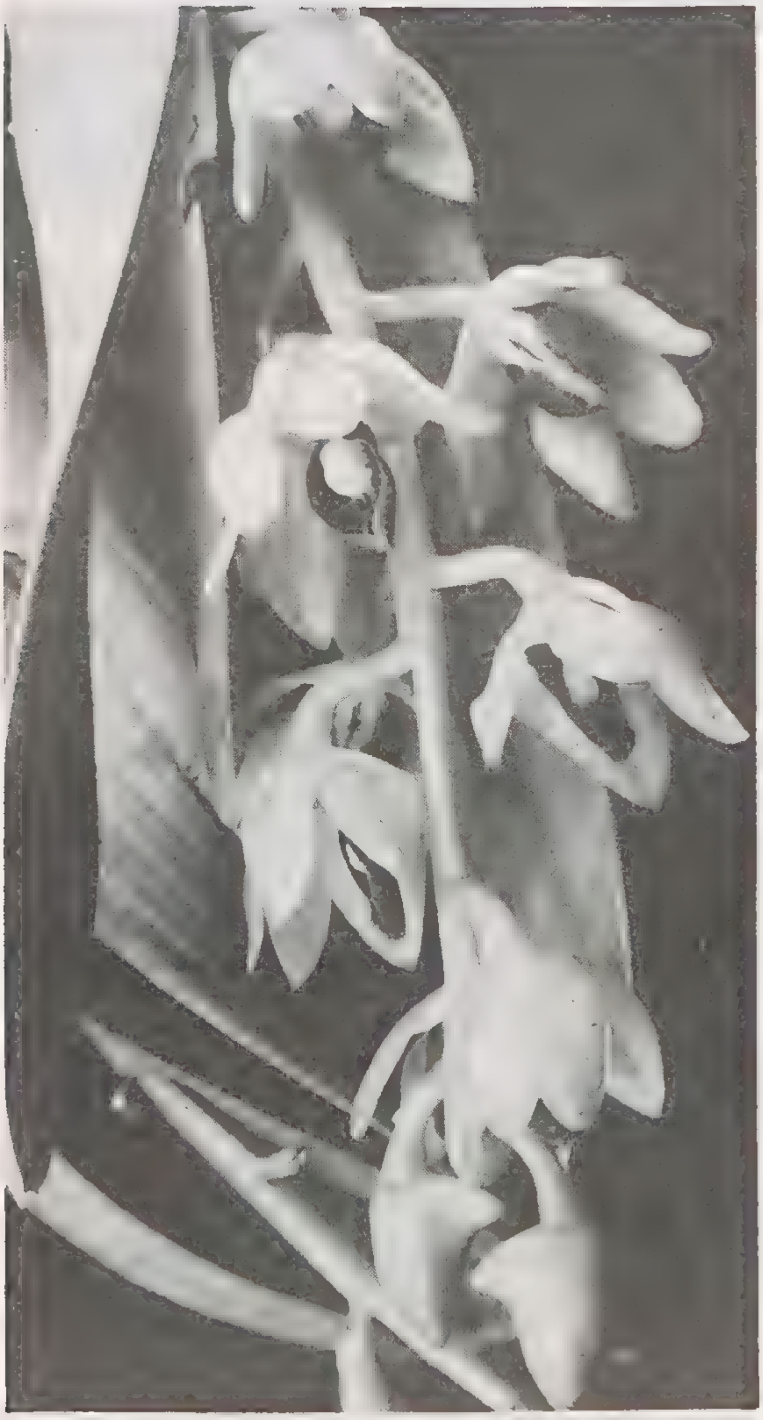


Fig. 2
Habitat of *Dendrobium geotropum*—epiphytic on moss encrusted *Pandanus* at Tomba. ▶
(Photographed 17/2/83
by T.M. Reeve)





◀ **Fig. 3**
D. geotropum.
Inflorescence of the Type plant (R.1044).
—from a colour slide photograph by T.M. Reeve.

COMBINED ANOS SYDNEY GROUPS – WINTER SHOW.

by P.J. Collin

The first "Winter" Show organised by the three Sydney based ANOS Groups (Port Hacking, Warringah and Sydney) was held at the Ryde School of Horticulture on 1st May 1983. The number of plants exhibited was not as large as the corresponding annual spring show held at Mona Vale (Sydney) (see Orchadian, 7 (6), 139. 1982). This was to be expected, owing to the time of the year (Autumn); however it did permit the showing of many plants that are not seen in the spring months.

The ANOS silver medal for the Champion Native Species was awarded to James Walker for his *Pterostylis ophioglossa v. collina.* This exhibit consisted of numerous plants of uniform height and with freshly opened flowers.

The ANOS silver medal for the Champion Native Hybrid orchid was awarded to Mike Harrison for his *Dendrobium X grimesii,* a rather large plant on tree fern displaying many pendulous sprays of glittering white flowers. (See fig 1, plant, and fig. 2, flowers).

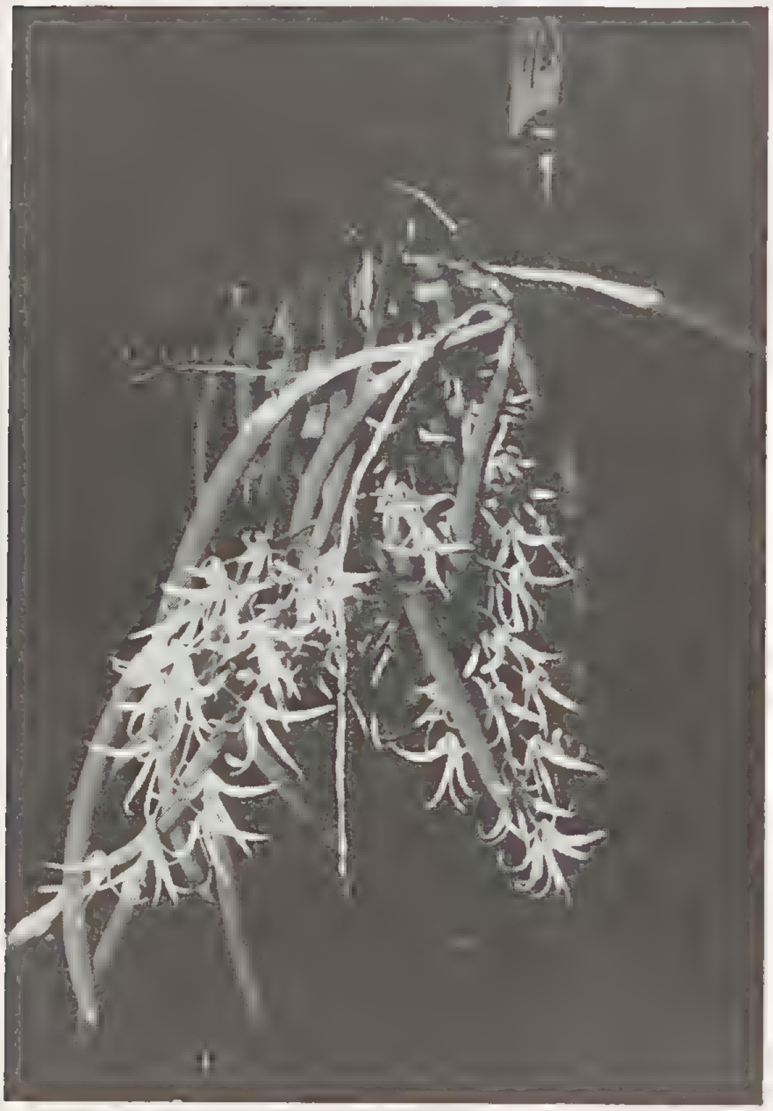


Fig. 1. *Denbrobium X grimesii* (plant)
ANOS Winter Show (May 1983)
Champion Native Hybrid of Show and Ira Butler Trophy
—Owner: Michael Harrison

photos: (ex slide) by
P. Collin

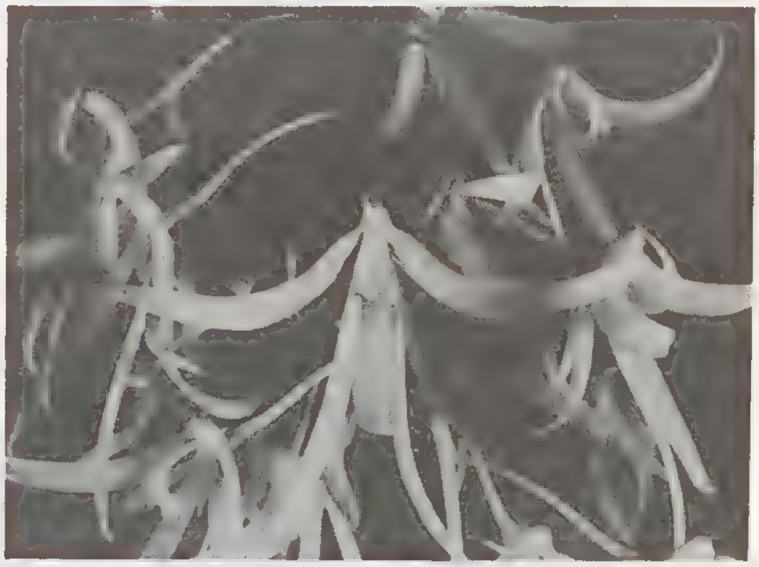


Fig. 2. *Dendrobium X grimesii* (flower)
ANOS "Winter" (Autumn) Show May 1983.
Champion Native Hybrid and Ira Butler Trophy — owned by Michael Harrison.

Photo (ex slide) P. Collin

Other plants that caught the eye were *Bulbophyllum weinthalii*, *Dendrobium bigibbum* (white form) (fig 3) and *D. rigidum* (fig. 4). The *Bulbophyllum weinthalii* exhibited by Don Barnham was judged 1st in the 'Best Other Epiphytic Species' class. This was a magnificent specimen plant, well established on a tree fern slab and carrying numerous newly opened flowers.

For those who had just read Mike Harrison's article in the March *Orchadian* this was a perfect illustration of how well this species can grow and flower on a tree fern slab.

The *Dendrobium bigibbum* (white form) plant was judged 1st in the 'Best Dendrobium Species' class for Laurie Jarvis. This was a relatively small plant, well grown with each new growth becoming progressively larger, the tallest of which had one raceme of well presented white flowers of excellent shape and size.

The *Dendrobium rigidum* was grown by Peter Hind. This plant, originally from the Tozer's Gap area of Queensland exhibited a more open flower with much wider and longer labellum than is usual in this species. The labellum was yellow with only traces of red towards the edges A very desirable clone that attracted much attention.

Other Australian species not often seen on the show bench were *Dendrobium tozerensis, D. malbrownii, Sarcochilus dilatatus* and *Podochilus australiensis.*

The New Guinea Species Class contained several small but colourful and well grown plants of *Dendrobium pentapterum* (1st in Class), *D. hellwigianum, D. cyperifolium* and *D. vexillarius ssp. uncinatum.* All of these were exhibited by Richard Johnstone. For many, this was a first opportunity to see an array of the species of the *Oxyglossum* Section reviewed by Reeve and Woods in *The Orchadian* (Sept 1980, 6 (9), 195-208). It was a credit to the grower.

Of the hybrids one that attracted much attention (apart from Mike Harrison's *Dendrobium X grimesii* mentioned previously) was Allan Peck's *D. johannis x D. bigibbum,* a well grown specimen plant displaying numerous racemes each carrying up to 30 flowers. One of its most striking features was the colour of the flowers which was a deep reddish purple. The colour was uniform on the sepals and petals (including the labellum) but with an extra darkening of the lower half of the labellum. This greatly increased the visual impact of this hybrid. This plant was much more colourful (though less shapely) than the numerous *Dendrobium bigibbum* and *D.X. superbiens* plants on show.

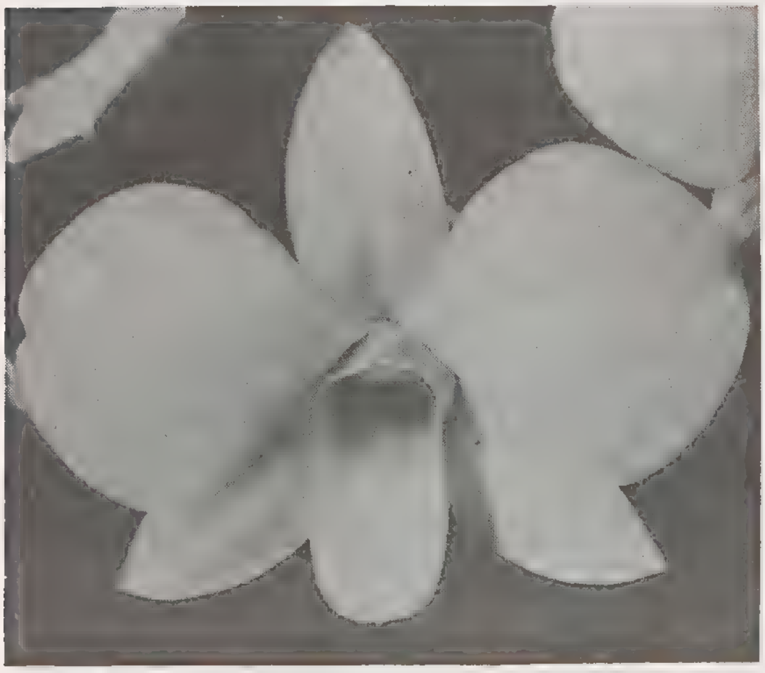


Fig. 3. *Dendrobium bigibbum* (white)
ANOS Winter Show (May 1983).
Owner: L. Jarvis
Photo: (ex colour slide) by P. Collin.

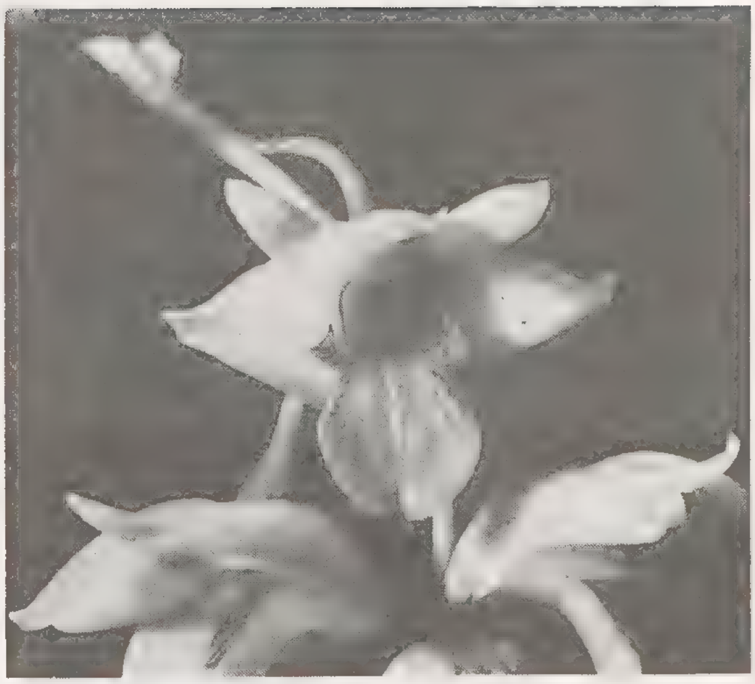


Fig. 4. *Dendrobium rigidum*
ANOS Winter Show (May 1983).
Owner: Peter Hind.
Photo (ex slide): by P. Collin.

The show must be considered a success and should continue as an annual event. Perhaps the timing should be changed to a later date, June, at which time more of the winter flowering terrestrials and cool growing epiphytic hybrids would be available. These additional plants would more than make up for the loss of the heat-loving plants such as *Dendrobium bigibbum* and its hybrids. If the month of May is adhered to — and this year's experiment could well support this — then it could be named as the annual Autumn Show.

33 Darnley Street,
Gordon, 2072

May, 1983.

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BOOK REVIEW

"Native Orchids of New Zealand," by John Johns and Brian Molloy. Publisher: A.H. & A.W. Reed Ltd., 68-74 Kingsford-Smith Street, Wellington (P.O. Box 14-029, Kilbirnie, Wellington 3, N.Z.) Retail price (N.Z.)$29.95. Order direct from the publisher.

This new book came to hand by air-mail as we were going to press. Its publication date was 25 May, 1983 but we had received prior notice from Dr Molloy in February.

In every way this is a beautiful book — from the decorative blue *Thelymitra venosa* plate on the jacket front to the unnamed *Pterostylis* on the back. The 124 pages include 64 pages of excellent full-colour photographs and 39 figures in black-and-white photography. The brilliance and detail of the colour close-ups is matched by the beauty of the landscape habitat scenes in both colour and black-and-white. All of the photography is the work of John Johns, official photographer with the New Zealand Forest Service, who has an Associateship of the Royal Photographic Society as well as a Diploma of Forestry.

It is fitting that the elegance of the book should be accompanied by an admirable simplicity in the text which covers briefly but adequately for the general reader, an introduction to the orchid family, the orchid plant, and the nature and distribution of New Zealand orchids. The point is made that it is not intended to be a technical book nor a substitute for other works on New Zealand orchids; but rather a complementary work to such publications as the *Flora of New Zealand,* Volume 11 (Moore and Edgar) and to Dorothy Cooper's *A Field Guide to New Zealand Native Orchids* (see the favourable book review by Peter Weston in *The Orchadian*,. Vol. 7, No. 2, p.41, December 1981).

Part 2 contains the full colour plates each accompanied by concise descriptive text on each genus and species, their chief features, differences, status and other items of interest such as distribution, habitat and flowering time.

Part 3 deals with distribution (with some statistical data and a comprehensive table showing the regional distribution for all species); habitats, origin and relationships (especially with Australia). There follow short chapters on "Cultivation of New Zealand Orchids", "Conservation" and finally "Photographing Orchids." There are six useful Appendices — one being a "Checklist of New Zealand Orchids."

From beginning to end this book is admirably brief, well written and easy to read. Yet the reader is constantly aware of a sound scientific basis on which its simplicity depends. It is not surprising therefore, to learn from the publishers' note on the authors that Dr. Brian Molloy (M.Sc. (Hons). and Ph.D) is a scientist in the Botany Division of the Department of Scientific and Industrial Research, his work including studies of several plant groups, nature conservation and soil and vegetation history. He is a member of a number of Boards of public authorities relevant to those studies. Just for good measure Dr Molloy was a former All Black and New Zealand University rugby player.

Some randomly selected highlights from the book may serve as appetisers:

"Roughly half the N.Z. orchid species are immigrants . . . Clearly some of them are recent arrivals by the traditional west-east trans-Tasman route, either by the dispersal of wind-borne seed, or seed carried by migrating birds. *Cryptostylis subulata* and *Chiloglottis gunnii* are the most recent examples". (p.95).

Some of these immigrants make what the author calls a "landfall" but do not successfully establish themselves. However *Cryptostylis subulata,* well known in Australia to be fertilised by the pseudocopulation of male ichneumon wasps, has settled in Northland, N.Z. where it was discovered as recently as 1975. The same species of wasp is found in Northland and, by all accounts, the immigrant orchid thrives in this habitat (Motutanig Swamp) and is extending its area" (p.40). Australian readers will be surprised to learn that *Pterostylis nutans,* on the other hand, has not thrived and is now placed in the "extinct" category — i.e. it is believed no longer to occur naturally in the wild in N.Z. (p. 104).

"We also feel that introduced conifer forests must be seriously considered in the conservation of orchids. It is clear that several of these forests support extraordinary populations of native orchids, and some attempt should be made to study this interesting relationship and its future implications". (p.105).

The first recorded locality for *Chiloglottis gunnii* in N.Z. (discovered in the South Island by Grant Bawden in December 1981) is in a 75 year-old plantation of European Larch, flanked bv Silver Birch (Hanmer Forest Park). It grows there with *C. cornuta* and two species of *Gastrodia* (p.91). (Dr Molloy will shortly publish, in *The Orchadian,* a short illustrated article on *Chiloglottis gunnii* at this site and its subsequent discovery elsewhere).

In a note on the Checklist of N.Z. Orchids (appendix 3, pp.111-112): "Indeed the orchids as a group demonstrate the need for a 'one flora' approach between our two countries, with so many genera and species in common. The orchids then are poised once more for a joint trans-Tasman apprasial of the kind begun by Herman Rupp and Don Hatch several decades ago."

A final "appetiser" for the photographers among us: If I were asked to nominate the two pages containing the most beautiful, and at the same time, most detailed and informative photographs in this book they would be the colour plates at pp 32 and 33 where plate 33 depicts an inflorescence of *Calochilus robertsonii;* plate 34 shows a trotting race in progress at Arawa Park racecourse, Rotorua — the habitat of *C. robertsonii* ("one of the largest known populations of *C. robertsonii* growing among short grasses and shrubs"); plate 35 then shows a full plant of this orchid rising from the grass, and plate 36 is an astonishingly beautiful close-up portrait of this red-bearded racegoer!

If you want this book, remember that outside New Zealand you will need to order direct from the publisher at this stage. The price quoted above is the N.Z. price only.

— J. J. Betts

TAXONOMY

Dendrobium sect. *Spatulata* Lindl., the correct name for the "antelope" dendrobiums

by P.J. Cribb

Summary: The well-known sectional name *Ceratobium* is shown to be a later synonym of *Dendrobium* sect. *Spatulata* Lindl. A lectotype is selected here for the section.

The sectional name *Ceratobium,* proposed by Lindley (1850), for the "antelope" dendrobiums is now well established in the botanical literature and is widely used by horticulturists. However, it did not gain acceptance used by Kraenzlin (1910) in his revision of the genus and, perhaps more influentially, by Schlechter (1912).

In the meantime, Reichenbach had referred to this section variously as *sect. Stachyobia Antennata* (1878), sect. *Antennifera* (1883) and sect. *Antennatae* (1886). I can find no evidence of either of the last two sectional names being validly published. Schlechter (1905) further added to the confusion by establishing his sect. *Strebloceras* but later, in 1912, reverted to using sect. *Ceratobium.* Meanwhile, Kraenzlin (1910) although including most species in sect *Ceratobium* nevertheless referred four species (including *D. tokai* Rchb. f.) that undoubtedly belonged there to a new section *Tokai.*

Unfortunately, when Lindley (1850) established sect. *Ceratobium,* he overlooked or ignored his earlier sectional name *Spatulata* published some years earlier in Hooker's London Journal of Botany (1843). Since he included almost the same selection of species under each name, it must be concluded that he renamed the section for reasons of euphony rather than for taxonomic or nomenclatural reasons.

Following the rule of priority laid down in the International Code of Botanical Nomenclature (1978), it is necessary therefore to resurrect sect. *Spatulata* and to reduce sect. *Ceratobium* to synonymy. Although this is unfortunate in view of the widespread use of the later sectional name, there is no provision in the Code for the conservation of names at that rank.

The typification of the section also needs reconsideration. Kraenzlin (1910) states that sect. *Ceratobium* is based on *D. bicaudatum* Reinw. ex Lindl. However, this species was not among those mentioned by Lindley when he established that section. When he established sect. *Spatulata,* he included in it *D. mirbelianum, D. antennatum, D. veratrifolium (= D. lineale*), *D. macranthum, D. undulatum* (= *D. discolor)* and *D. affine* (now placed in sect. *Phalaenanthe*). Of these, *D. antennatum,* being a typical, well known and distinct species is now chosen to lectotypify sect. *Spatulata.*

Dendrobium sect. **Spatulata** *Lindl.* in Hook. Lond. J. Bot. 2: 235 (1843). Lectotype: *D. antennatum* Lindl. selected here.

D. sect. *Ceratobium* Lindl. in Paxt. Fl. Gard. 1: 134 (1850) & in J. Linn. Soc. 3: 20 (1859).

D. sect. *Antennifera* Rchb.f. in Gard. Chron. 1: 656 (1883). nom. illeg.

D. sect. *Antennatae* Rchb.f. in Gard. Chron. 1: 266 (1866). nom. illeg.

D. sect. *Strebloceras* Schltr. in Schum. & Lauterb. in Nachtr. Fl. Deutsch. Schutzg. Sudsee 165 (1905).

D. sect. *Tokai* Kraenzl. in Engl., Pflanzenr. Orch.-Mon.-Dendr. 1: 242 (1910).

A section of about 40 species centred on New Guinea but extending to Java, the Philippines, Queensland and Samoa.

References See listed under D. sect. *Spatulata* and its synonymy above.

A Preliminary Key to *Dendrobium* sect. *Spatulata* Lindl. (syn. sect. *Ceratobium* Lindl.) in New Guinea and the Bismarck Archipelago

by P.J. Cribb

Summary: A preliminary attempt to produce a key to *Dendrobium* sect. *Spatulata* is offered for critical examination. An index of specific epithets with suggested synonymy is appended.

Dendrobium sect. *Spatulata* Lindl. (better known as sect. *Ceratobium* Lindl., a later synonym) comprises about 40 species with a distribution ranging from Java and the Philippines to Australia and the Pacific Islands. Accounts of the species found in the Pacific Islands (Cribb, 1982 & in press) and in Australia (Lavarack & Cribb, in press) have already been completed but involve only about a third of the species in the section. By far the greatest concentration of species is in New Guinea and the adjacent islands where perhaps three-quarters of the species are to be found.

A preliminary account of the species from New Guinea and the adjacent Bismarck Archipelago is presented here and it is intended that the final account will be incorporated in a revision of the whole section. In presenting this treatment, I would ask all those who grow these delightful orchids to test the key on living plants, where possible, and to let me know of any shortcomings or where improvements might be made. I would also be grateful for specimens, preferably with provenance data attached, preserved in alcohol and accompanied by a colour slide of plants that do not key out here. One or two flowers, cut to include a cm. or two of the inflorescence axis and also a leaf, would be preferred if at all possible.

The problems involved in the study of New Guinea orchids have already been adequately outlined in this journal by Reeve & Woods (1980). Similar problems such as destroyed types, and the identification of infraspecific variability and natural hybridisation have also greatly hindered the preparation of this revision. Therefore, when using the key that follows it should be borne in mind that some species can vary considerably in such features as flower size and colour, petal length and twisting and plant size. Usually features of the lip and column in the flowers, and vegetative features such as leaf shape and bract type are more conservative and therefore more useful for identification purposes. Natural hybrids are not infrequent in the section, Schlechter (1912), for example, described *D. x schumannianum* as a hybrid of *D. lineale* and *D. antennatum.* I have several times been shown plants in cultivation, claimed as wild collected, which are undoubtedly of hybrid origin, but whether natural or artificial is often impossible to say. In particular, of the species listed here *D. andersonianum* is one which I suspect of being of hybrid origin.

KEY TO THE SECT. *SPATULATA* IN NEW GUINEA AND THE BISMARCK ARCHIPELAGO

1. Leaves semiterete, longitudinally grooved on upper surface, largest less than 1 cm broad; stems pseudobulbous, ovoid or elliptic, 3-12 cm. long . . . . *D. canaliculatum*
1. Leaves dorso-ventrally flattened, largest more than 1 cm broad, often much more; stems cane-like or sometimes fusiform especially in young plants, most more than 20 cm long and often much longer:
    2. Inflorescence with tubular sheathing bracts; pedicels emerging a few mm above the axil of each bract:
        3. Lip more than 3.5 cm long;mentum more than 1.5 cm long; petals more than 5.5 cm long. . . . . . 7.*D. stratiotes* (Moluccas,?New Guinea)
        3. Lip less than 2.8 cm long; mentum less than 1.3 cm long; petals less than 5.3 cm long:
            4. Callus on lip with mid ridge raised at apex on mid-lobe . . . . 9.*D. strepsiceros*
            4. Callus on lip with mid-ridge tapering to apex or, at least, not raised on mid-lobe:
                5. Petals purple:
                    6. Lip c. 3 x 2 cm; callus with 5 prominent ridges; side lobes with entire margins, not rugulose on surface; mid-lobe subcircular to subcordate, apiculate, with recurved sides . . . . .6.*D. leporinum*
                    6. Lip c. 2.5 x 1.6 cm; callus of 3 prominent ridges; side lobes with erose margins, rugulose towards base; mid-lobe ovate, acute, recurved at apex . . . . .5.*D. devosianum*
                5. Petals green, yellow-green or brown; sepals white to green sometimes flushed green or brown:
                    7. Petals brown; mid-lobe of lip with a distinct oblong claw; side lobes of lip rhombic, verrucose on inner surface; callus with 3 ridges extending almost to apex of mid-lobe of lip . . . . 8. *D. strebloceras*
                    7. Petals green or yellow-green; mid lobe of lip not or only indistinctly clawed; side lobes oblong, rounded in front; callus with only central ridge extending to middle of mid-lobe of lip . . . . . .4.*D. antennatum*
    2. Inflorescence with spreading triangular to lanceolate bracts; pedicels emerging from the axil of each bract:
        8. Leaves linear to narrowly lanceolate, acute, largest less than 1.5 cm broad; callus with ridges breaking down into verrucae on mid-lobe of lip:
            9. Mid-lobe of lip as broad as side lobes when spread; lip oblong in outline; petals ochre more or less veined with purple; mentum straight . . . . .3.*D. semifuscum*
            9. Mid-lobe of lip narrower than side lobes when spread; lip elliptic in outline; petals dark purple-brown; mentum pointing backwards . . . . 2. *D. johannis*
        8. Leaves oblong to elliptic, obtuse or rounded at apex, largest more than 2.5 cm broad; callus ridges not breaking up on mid-lobe of lip:
            10. Petals 1 cm or more broad at the broadest:
                11. Dorsal sepal less than twice as long as broad, oblong, rounded at apex, more than 1.1 cm broad in apical half; lateral septals similar; mid-lobe of lip with reflexed side margins . . . . 30.*D. violaceoflavens*
                11. Dorsal sepal more than twice as long as broad, elliptic to narrowly oblong, obtuse, 1 cm or less broad; lateral sepals obtuse to subacute; mid-lobe of lip reflexed but lacking reflexed sides:
                    12. Sepals and petals creamy white; petals half twisted; dorsal sepal strongly recurved . . . . 21.*D. wulaiense*
                    12. Sepals and petals yellow; petals not twisted; dorsal sepal not or only slightly recurved . . . . 18.*D. schulleri*
            10. Petals less than 1 cm broad, often much narrower:
                13. Apex of column bearing prominent acute stelidia, longer than the anther cap . . . . .25. *D. helix*
                13. Apex of column lacking prominent acute stelidia:
                    14. Lowermost floral bracts more than 1 cm long:
                        15. Sepals and petals undulate crisped on margins; lip over 1.5 cm broad when flattened, ±with erose to fimbriate side margins: mid-lobe less than 1/4 length of lip, often twisted . . . . 14.*D. discolor*
                        15. Sepals and petals not undulate – crisped on margins; lip about 1cm broad when flattened, with entire margins; mid-lobe about 1/3 length of lip not twisted . . . . 19.*D. sylvanum*

14. Lowermost floral bracts less than 9 mm long:
16. Mid-lobe of lip noticeably broader than long:
17. Flowers yellow, veined purple on lip, callus with central ridge raised at apex to form a flap-like lamella . . . . 11. *D. odoardii*
17. Flowers pink or lilac, veined lilac on lip; callus ridges not raised at apex . . . . 10. *D. nindii*
16. Mid-lobe of lip longer than broad or at least as long as broad:
18. Flowers predominantly red-purple or pink-purple, glossy; lip grooved longitudinally on lower surface; lip mid-lobe with reflexed sides obovate; apiculate . . . . 26. *D. lasianthera*
18. Flowers predominently white, yellow, greenish or brown; lip not grooved below; lip mid-lobe lanceolate, ovate, elliptic or oblong, acute to obtuse, often recurved but never with reflexed sides:
19. Lip with one to three callus ridges raised at apex on mid-lobe of lip:
20. Callus with all three ridges prominently raised at apex on mid-lobe of lip:
21. Flowers yellow or brownish:
22. Petals linear, acute 3-4 times twisted . . . . 20. *D. trilamellatum*
22. Petals spathulate, obtuse or rounded at apex, scarcely twisted or once twisted:
23. Lip narrow, less than 1 cm broad, Petals less than 0.8 cm broad . . . . 19. *D. sylvanum*
23. Lip broader, more than 1.3 cm broad; petals more than 1-2 cm broad . . . . 18. *D. schulleri*
21. Flowers white, cream, pink or mauvish:
24. Lip mid-lobe boldly purple-veined, with side margins incurved towards apex, broadly ovate-subcircular; callus ridges raised but not abruptly so at apex; petals cream coloured, obtuse . . . . 21. *D. wulaiense*
24. Lip mid-lobe not or only faintly purple-veined, reflexed somewhat at apex, oblong or obovate with undulate margins; callus ridges abruptly raised at apex:
25. Petals usually 2 to 3 times twisted, subacute or acute; usually more than 3 cm long; lip mid-lobe obovate; callus ridges raised at apex to form somewhat acute lamellae . . . . 15. *D. gouldii*
(New Ireland and Solomons)
25. Petals usually once twisted or less, obtuse or rounded at apex, usually less than 3 cm long; lip mid-lobe oblong, with undulate margins, callus ridges raised at apex to form somewhat oblong erosely margined lamellae. . . . . 17. *D. lineale*
(New Guinea)
20. Callus with only central ridge raised at apex:
26. Flowers large; petals more than 6 mm broad; lip more than 2.5 cm long, 1.5 cm broad; mentum not upcurved at apex; lateral sepals recurved:
27. Lip mid-lobe as broad as long, very obtuse or shallowly emarginate; flowers predominently yellow; sepals and petals not reflexed nor contorted . . . . 12. *D. aries*
27. Lip mid-lobe longer than broad, acute; flowers brownish; sepals and petals often reflexed and often contorted. . . . . 13. *D. conanthum*
26. Flowers small; petals less than 3 mm broad; lip less than 1.7 cm long, 0.9 cm broad; mentum upcurved at apex; lateral sepals not recurved. . . . . 16. *D. hamiferum*
19. Lip with callus ridges tapering to apex or, at most, not noticeably raised at apex on mid-lobe:
28. Margins of mid-lobe markedly undulate—crisped; lip mid-lobe violet, sepals and petals white or off-white . . . . 24. *D. crispilinguum*
28. Margins of mid-lobe entire or only gently undulate, mid-lobe not violet; sepals and petals yellow to brown:
29. Mid-lobe lanceolate; acuminate, tapering from base to apex, not recurved; lip orange with red veins; lateral sepals not recurved; side lobes of lip with markedly erose margins . . . . 26. *D. magistratus*
29. Mid-lobe ovate to oblong, more or less recurved; lip yellow or white with brown or purple veins; lateral sepals recurved; side lobes of lip with entire or only slightly erose margins.

30. Petals strongly spirally twisted at least three times, dark purple-brown with yellow margins; dorsal sepal spirally twisted; lip yellow with purple veins; mid-lobe oblong, obtuse; side lobes with transverse rugulose ridges . . . . 23. *D.cochlioides*

30. Petals untwisted to, at the most, twice twisted, yellow, ochre or orange speckled with red; dorsal sepal recurved or straight but never spirally twisted; lip mid-lobe ovate, acute; side lobes lacking rugulose ridges:

  31. Petals at most with half a twist, scarcely spreading; sepals spreading but not strongly recurved; flowers ochre-yellow or greenish yellow, sometimes flushed with brown . . . . .28.*D. mirbelianum*

  31. Petals once or twice twisted, suberect — spreading, flowers whitish, pale green, pale yellow or orange ± flecked with red:

    32. Flowers orange more or less flecked with red; callus lilac-coloured; mid-lobe strongly recurved; front part of side-lobes of lip half as long as mid-lobe of lip; side-lobes with entire margins . . . . 29.*D. tangerinum*

    32. Flowers whitish, pale greenish or pale yellowish with a white callus and purple veined lip; mid-lobe weakly recurved; front part of side lobes scarcely overlapping base of mid-lobe; side lobes with slightly erose margins . . . . 22.*D. andersonianum*

INDEX OF NEW GUINEA AND BISMARCK ARCHIPELAGO *DENDROBIUM* SECT. *SPATULATA (CERATOBIUM)* EPITHETS

andersonianum Bail. 22
anguste-victoriae Kraenzl. = *lineale*
antennatum Lindl. 4
arachnanthe Kraenzl. no material seen
aries J.J. Sm. 12
aruanum Kraenzl. = *mirbelianum*
buluense Schltr = *mirbelianum*
canaliculatum 1
cochliodes Schltr 23
cogniauxianum Kraenzl. ex Warb. = *lineale* in part
& = *sylvanum* in part (fide Schltr)
conanthum Schltr 13
crispilinguum Cribb 24
d'albertisii Rchb. f. = *antennatum*
devosianum J.J. Sm. 5
discolor Lindl. 14
giulianettii Bail. = *mirbelianum*
gouldii Rchb. f. 15
grantii C.T. White = *lineale*
hamiferum Cribb 16
helix Cribb 25
imperatrix Kraenzl. = *lineale*
ionoglossum Schltr = *nindii*
ionoglossum Schltr var. *potamophilum* Schltr = *nindii*
jennyanum Kraenzl. = *lineale*
johannis Kraenzl. 2
lasianthera J.J. Sm. 26
leporinum J.J. Sm. 6
lineale Rolfe 17
magistratus Cribb 27
mirbelianum Gaud. 28
nindii W. Hill 10
odoardii Kraenzl. 11
ostrinoglossum Rupp = *lasianthera*
prionochilum Muell. & Kraenzl. = *sylvanum*
robustum Rolfe = *sylvanum*
ruidilobum J.J. Sm. = *cochliodes*
schulleri J.J. Sm. 18
semifuscum (Rchb. f.) Lavarack & Cribb 3
stratiotes Rchb. f. 7
strebloceras Rchb. f. 8
strepsiceros J.J. Sm. 9
sylvanum Rchb. f. 19
tangerinum Cribb 29
trilamellatum J.J. Sm. 20
undulatum R. Br. = *discolor*
validum Schltr = *sylvanum*
vandiflorum Rchb. f. no material seen
veratrifolium Lindl. = *lineale*
veratroides Bakh. f. = *lineale*
violaceoflavens J.J. Sm. 30
warianum Schltr = *sylvanum*
wulaiense Howcroft 21

Acknowledgements

I would like to thank the Australian Orchid Foundation for their support; G. Hermon Slade, Tom Reeve, Neville Howcroft, Bill Lavarack, Don Blaxell, Jim Simmons and many others for their help and encouragement.

March, 1983

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CONSERVATION

WHERE DO THEY COME FROM? — Some Questions and Answers

By Gerry Walsh

Virtually 100 per cent of all the native orchids on sale in N.S.W. are plants that originally came from wild sources. Laboratory raised plants of straight species have never been made commercially available, although desirable forms of some species do occasionally appear in very limited numbers in specialist native orchid nurseries.

Native hybrids have fared much better. Most orchid nurseries carry a few of the more popular varieties such as *D. x delicatum.* But when Mr and Mrs Joe Blow decide they want a few of the more showy natives they are not interested in searching out fancy forms with meaningless sub-titles. They want a "Rock Lily", or "Rock Orchid" or "Pencil Orchid" like the ones they saw at the Sunday markets or local flower show. So off they trot to a nursery, or when they go up North for their annual holidays, they call in to a run-down dairy farm with a hand painted wooden sign out the front advertising "Stags, Elks and Native Orchids". Such outlets rely solely on plants from private property, state forests or casualties from civil projects such as road building and dam construction.

The various State authorities issue licences to collectors to permit them to remove such plants. In New South Wales the main authorities are The National Parks and Wildlife Service and the Forestry Commission. These Government Departments also collect royalties on each plant removed. As I see it, the royalties are necessary to pay the wages of the people who collect the royalties. The people who collect the royalties also monitor the number of plants removed and the method of their disposal. This monitoring of statistics then allows the authorities to calculate how many plants can be removed in the future. This figure established, the royalties per plant can then be decided upon. Presumably the royalties would be high enough to cover the budgeted wages of people who do all this mindboggling calculus.

On the positive side, the N.P.W.S. has done some tremendous work in the National Parks of N.S.W. The construction of walking tracks and access roads to points of scenic and scientific interest has made life so much easier for the young, the elderly and the disabled. Water tanks, toilet facilities, barbecues (with wood!) and a host of other good points help to give the N.P.W.S. a good name. Speaking as a frequent user of unsealed roads in N.S.W., I must say that I can always tell that when a dirt track becomes a well graded road, then I have left a local council or shire and entered a State Forest. Forestry roads are a pleasure to drive on and the facilities in most State Forests are usually equal to any National Park.

But when it comes to protecting native flora these two organisations are sadly lacking. When some serious thought is given to the subject, a lot of questions arise which have no logical answers.

I can see merit in the licensing system when applied to epiphytic orchids. As long as we have a logging industry there will always be orchid casualties. It is totally senseless to let them rot on the forest floor when there are people who are willing to care for them, and despite my earlier sarcasm I believe there should be some form of revenue gathering attached to the licensing system in its present form. Some of the royalties must go towards the upkeep of the facilities I mentioned previously.

The licensing system fails miserably in respect to some of the orchid species that are currently collected with official approval. Antarctic Beech trees are protected in N.S.W. and, as everyone knows, *Dendrobium falcorostrum* grows only on this species. Yet there are vast numbers of *D. falcorostrum* on sale in this state. I recently visited a large native nursery on the North Coast that had an area of about 5m x 5m chocked solid with this orchid — all of it straight from the bush. This nursery had permit tags on every orchid for sale; so obviously they were all "legally collected". I cannot accept for a moment that they were all picked up from the forest floor. I also visited three other native nurseries in the area and all had heaps of *D. falcorostrum.* Why is this species on sale with official sanction if its host tree is a protected species?

Now — what about lithophytic species? How do the authorities justify their allowing these to be collected under licence? Take *Sarcochilus fitzgeraldii* for a start. This species grows only in very rugged, very steep and usually isolated ravines. I have observed it in two locations in gorges where the watercourse was nothing more than a series of waterfalls with hardly any flat areas between them. Progress up these gorges is painfully slow and arduous, certainly no place for the faint hearted. Not even an insane axeman would attempt to fell a tree in such places; for the tree could not be retrieved. And it would be madness to attempt to build a road in such terrain. Man does not interefere with this orchid's territory except for the wanderings of bush walkers and orchid enthusiasts.

Yet during the past 18 months, *S. fitzgeraldii* has been freely advertised in a well known national gardening magazine by two native plant dealers. How in hell does the Government department that issued a licence for the collection of this species justify its actions? Being a rock dweller, *S. fitzgeraldii* does not suffer any damage from the logging industry. And one road, if it did cross a suitable gorge, would not damage sufficient specimens to supply two dealers with enough plants to advertise it nationally. Certainly such gorges are not used for agricultural purposes; so that rules out land clearing as a reason.

The probable explanation is that a licensed collector has added *S. fitzgeraldii* to the list of epiphytic orchids intended to be collected from a forestry area that has been logged. Unless the examiner of the application form is familiar with his orchids, he could easily put his rubber stamp to it and make it official. I know of two instances where this has happened with other species. It doesn't take a genius to work this out — but it may take one to pick up the bogus lincensee! I would love to know why this orchid is so freely available. **It should not be.**

There are other species in the same boat as *S. fitzgeraldi, S. hartmannii, S. ceciliae, Dendrobium speciosum, D. kingianum;* in fact all lithophytes. Loggers could remove every tree over the range of these species and nearly all of them would continue to grow unaffected. Most lithophytes grow in very strong light anyway; and many thrive in full sun. These species are almost completely unaffected by the activities of man, except for people who deliberately search for them. To be fair, some of these orchids must occasionally get in the way of bulldozers, but nowhere near the quantity that is sold in this State, and with "protected plant" tags stuck on them as well. I ask once again: **'Where do they come from?'**

I don't think any of the species I have discussed should be collected from the wilds and sold through commercial outlets. Certainly these species do occur quite commonly in private collections, possibly collected by the owner or some other enthusiast. But this type of collecting is negligible when compared to professional raiders operating with legal protection — and with the Government raking off some of the profits.

I suppose I get carried away when discussing the "Protected Plant" system, but I make no excuses. It's a topic everyone should seriously think about. Perhaps I have a warped outlook on the subject. If so, please put me on the right track.

Criticism is a waste of time unless remedial suggestions can be presented.

THE WAY I SEE IT

I've been considering the problem for a long time now and the more thinking I do, the more confused I become. But I have reached at least two solid conclusions. Firstly, the ideals and intentions of the "Protected Plants' Legislation" are basically sound and desirable. It must be very difficult to write down in a few paragraphs a set of laws and by-laws to cover the complete flora of N.S.W.; but this is what is required of such legislation. I believe the laws and regulations as they stand may be adequate. The way I see it, **the system fails at the administration level.** By this I simply mean that the rules of the game are not being, properly applied or policed by the referee.

There are two main theatres of concern. The first is the apparent lack of knowledge possessed by some members of the two Government organisations that issue the licences to collectors. The second is the lack of follow-up after the licence has been issued.

In the first case, I suspect that not many rangers have sufficient knowledge of Native Orchids to play the role of God when deciding what is best for them. I have spoken to many rangers in the various State Forests and National Parks of N.S.W. I always make a point of speaking to those I run into. In the main they are a friendly and informative group — a pleasure to talk to. Most have a sound knowledge of the trees and animals in their care. But I have only met one ranger who had a good knowledge of all the native orchids in his domain. That was in Dorrigo National Park in 1978. Most manage a few nods of the head and a couple of common names and that's about it.

I don't claim for a moment to have polled every ranger in this State. I can only draw on my own conclusions gained from informal chit-chat. (Mind you, I always slip in a few questions on you know what.) There are undoubtedly experts within these two Departments — but are these experts the examiners of the licence applications? I think not. I will explain why.

I once did a course at the Ryde School of Horticulture that brought me into contact with many people from the nursery and landscaping trade. I often discussed "Protected Plants" with other students. I must say that during those three years I learned a lot about the System. One fellow in particular was a fountain of knowledge. I will call him Peter. Peter had the job of driving up and down the coast picking up loads of Stags, Elks, and Native Orchids. He once picked up a load of *Dendrobium monophyllum* from near Forster, supposedly collected from a local State Forest. On another trip he picked up some *D. canaliculatum* from near Grafton. Peter assured me that in each of these cases, these two species were listed on the collectors' licences.

Peter's employer, a large wholesale nursery in Sydney, insisted that he check the licence of the supplier at every port of call. There was a good reason for this directive; so I shall digress briefly to let you know. When he was new on the job, Peter had been sent to the Kempsey region for a load. The police stopped him for a routine inspection. They promptly asked him where he got his merchandise. Peter gave a name, but the police then told him that it was the name of a local ranger! They checked out Peter's story. The ranger boldly denied having ever seen him. To cut the story short, Peter spent the night in the Kempsey "Lock-up". His employer sorted things out the next morning and all ended well.

I mention this story, not to put a slur on rangers (there are rogues in all walks of life), but to demonstrate my point that some of them have a lack of knowledge about orchids. Those two Dendrobium species could not possibly have occurred where the respective licences said they did. Obviously, in these two instances, the rangers were not qualified to process licence applications or to supervise the use of licences.

When a collector gains his licence, with the bogus species approved, he ships in a load collected from the "Banana Republic"*. He does not worry about quarantine laws and the like. It is far easier to sneak them over the border illegally. Once safely in N.S.W., the plant pirate takes his contraband to his licensed location and watches the dollars roll in. It must happen this way. How else could *D. monophyllum* come from Forster and *D. canaliculatum* come from Grafton? These are two occasions when the system has been beaten. How many other occasions have there been? I'm not saying that reputable nurseries get their plants this way. Obviously many shipments from Queensland are totally legal, and most collectors would be "above board". But where there is an opportunity for a quick dollar to be made, there are always some unscrupulous parasites willing to thumb their noses at the law. I believe that if **ALL** officers of the N.P.W.S. and the Forestry Commission had a complete knowledge of Native Orchids, this sort of hoodwinking would cease.

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* This expression has a special connotation for Australians in reference to the State of Queensland .

For a ranger to accurately gauge what species (and how many of each) can be removed from an area, he must do a complete survey of that native area. There is no use driving up a logging track and having a look out of the window to see what grows in the vicinity. There is no use asking the timber cutters what grows in the vicinity. There is no use relying on the honesty of the potential licensee for an accurate account of the species present. He must get off his rear and beat his way through the bush on foot. There is no other way.

A careful check must be made of the exact tree species to be cut down. I was once driving along a timber track near Kempsey, in a large State Forest. Suddenly a dirty great timber truck loomed up in front of me, at what seemed a reckless speed. How we missed each other I still don't know. After calling upon the Saviour to intervene, I sat there in a state of reflection for a few moments. I deduced that there were logging operations being carried out nearby. A bit further on, the track was blocked by a mammoth bulldozer type of vehicle. A group of men were sitting around a burning stump having morning tea. (They all looked like desperados from a John Wayne movie). I stopped the car. Despite my initial impressions they were quite a friendly crew.

"After staghorns, are ya?" was the first question asked (perhaps "demanded" is a more apt word).

I answered "no" in a higher voice than I normally use. They eventually wormed it out of me — I was interested in Native Orchids. So I was directed to a place where logging had finished some weeks previously.

"But don't touch anything on those three big trees felled beside the road on ya way up the hill! They're for a bloke that's got a licence to get 'em."

With wider than normal eyes and exaggerated shaking of the head, I assured them I wouldn't. (These sorts of blokes always make me feel as if I should be thanking them for not beating me up. It may be due to my clean-shaven face and white striped running shoes — or the "Save the Rainforest" sticker on the back window.)

Off I went. The three trees were all giant stinging trees (*Dendrocnide excelsa).* The epiphytic flora on those three trees represented four months wages to an average Australian. They grew right beside the track in an unlogged area. How convenient! The timber from this species rots away in no time. It's good for nothing. This species does not have a single commercial application. I believe these trees were felled purely to gain their protected flora. If Mr Ranger were conscientious he would have seen this vandalism sooner or later; and, hopefully, would have prosecuted both the loggers and the collector. I'll bet my house that nothing ever eventuated.

Now a few words on the follow-up after a licence has been issued. There should be plenty of investigation going on to ensure that the conditions of the licence are rigidly adhered to. Such things as checking that the number of plants removed does not exceed the number stated on the licence. Checking to ensure the total number of permit tags per licence are not used to remove only one or two saleable species. For example: a licence covering ten species, with 100 tags per species (total 1000 tags), should not be abused by removing 1000 specimens of only one species (such as staghorn fern). At the other end of the see-saw, it should be compulsory to remove the exact number of plants listed and not just a few of the better specimens, leaving the smaller or damaged specimens to die.

I believe the best action to ensure that this happens is as follows. Currently, all tags, regardless of species, present no more information than the words "Protected Plant" and a number. If a licensee is entitled to remove 100 *Sarcochilus falcatus* plants then the tags should have S. FALCATUS printed on them. This way, tags for species could not be used to remove other species.

The Forestry Commission and the N.P.W.S. should also keep track of what happens to tags after a licence expires. On the back of a licence it says that all unused tags must be returned to the Department concerned. I have a very close friend who had a licence and 500 tags to pick protected plants on private property. He did not have the opportunity to use them. The licence expired and he always had it in the back of his mind to return them, but he never got around to it. That was three years ago and the N.P.W.S. has not bothered to send a request for their return. They are still sitting in a bottom drawer with rubber bands around them.

There is one enterprising licence holder up near Coffs Harbour who found a good use for leftover tags. He sells them to anyone who wants them for 20¢ each. These two instances back up what I am preaching: there is virtually no follow-up after the licence has been issued.

I could go on and on with examples like this, but I think I have made my point. The Native Orchid field is a complex one as readers of these words will appreciate. We understand the workings of it because we have freely chosen to take an interest in our orchids and this is why we have a sound understanding of them. I think it is fair to say that if people in high places shared our understanding, then the system would run much, much better.

Why is the system not operating? In the instance of the lack of follow-up, perhaps it is lack of money or manpower, or maybe it is simply a matter of attitude. Maybe the old attitudes of fifty years ago ("She'll be right mate!") have been inherited by the officials of today. I keep thinking of the American reporter who asked an Australian why his countrymen were thought of as lethargic. Answer: He didn't know why, and anyway, he couldn't care less if they were or not. We cannot be blamed for thinking this is the case with the Forestry Commission and the N.P.W.S. Change has been too long coming. They seem too smug in their pigeon-holed ways.

The knowledge is not easily gained. Perhaps there should be a very intensive training course for rangers, with Native Orchids given the same status as bushfire regeneration and selective logging. Perhaps some members of A.N.O.S. should be made honorary rangers with a big say in decision making, when it comes to collectors' licences. Perhaps we could have some seminars and invite members of A.N.O.S. and rangers of the Forestry Commission and N.P.W.S. At least we could exchange points of view. And it would be better than what happens in the way of liaison at present — nothing!

We are members of the Australasian Native Orchid Society. Our creed is "The care and study of Australasian Indigenous Orchids." We should be contributing something on a united front. We should be approaching Government Departments with our ideas and suggestions. We are the experts. Let us have a voice in the proceedings!

A.N.O.S. Council should set up a committee to deal with situations like the ones I have quoted. The committee would work out the best course of action, and then instigate that action. I am not advocating the setting up of picket lines outside the State Office Block. But I do believe that as a body of concerned people we can make a lot of noise and be heard. The mass media thrive on such things as the examples I've cited, provided the complaints are well presented by an organised body such as A.N.O.S. Council. We must make the powers that be pull themselves out of their lethargy and get on with the job. The laws and regulations are already there. It's time they were enforced intelligently and effectively.

What about a hobbyist who collects a few plants on the weekend? This is a problem I have attempted to deal with in another article for **The Orchadian.** Without going into it too deeply, I believe the hobbyist can compensate for his sins if he wants to. He doesn't do much damage compared with the professional. Once the hobbyist has four or five specimens of a species he ceases to be a problem. The professional plunderer can never compensate for his sins nor can the "pusher" who knowingly sells illegally collected plants through retail outlets.

Financial gain is at the root of all the evil and the people who seek the money are the perpetrators of this evil. The perpetrators are never satisfied. They continue their activity to keep their wallets plump.

March, 1983.

35 Pembroke St.,
Cambridge Park,
N.S.W. 2750

TAXONOMY

This is the first of a series of papers from Kew by Mark Clements which will effect changes in his "Preliminary Checklist of Australian Orchidaceae" or explain name changes made in the first edition of the "Checklist" (1982).

Monadenia bracteata, the Correct Name for *Monadenia micrantha*

by M.A. Clements

Abstract: *Monadenia bracteata* **Swartz has been shown by Linder (1981) to be the correct name for the orchid previously known as** *M. micrantha* **Lindley. Details of that change are given here.**

Monadenia micrantha, the South African terrestrial orchid, accidentally introduced to the South-west of Western Australia some time in the early 1940's and now established there as a weed, has recently undergone a name change to *M. bracteata* Swartz. The circumstances surrounding that name change are worth repeating as they are unusual and may give readers an insight why some name changes are necessary.

The genus *Monadenia* was described by John Lindley in 1838. At the time he considered there were 8 species in the genus including *M. micrantha,* the latter being described from material collected at Knysna, Ruigtevallei by Drege (Linder, 1981). Superficially, such a description would seem to be in order, but those who know the South African flora, and the history of collection and description of species, found it puzzling why no one had earlier collected and described the species from the Cape area where it is widespread and often common (Knysna is about 400 km E. of the Cape of Good Hope). Linder (1981) provided the answers to that puzzle while studying material for his revision of *Disa* and its allies.

To view a number of Reichenbach's specimens Linder visited the herbarium in Vienna and there located a herbarium capsule containing several flowers and an inflorescence of the plant generally known as *Monadenia micrantha.* This specimen was annotated *'Disa bracteata* Swartz scripsit', the specific epithet being apparently written in Swartz's own hand and therefore probably represented the Type of the species. The discovery of this specimen by Linder was quite significant as repeated attempts by earlier authors, notably Bolus, to locate the Type of *Disa bracteata*, had failed (Bolus, 1888). It is reasonable to assume that the Type of *D. bracteata* was borrowed from Sweden by Reichenbach and never returned, a rather common occurrence where the latter author was concerned. As there was no record of the specimen ever having been "borrowed" from Sweden then it was little wonder it was lost for such a long time. Linder's discovery also makes sense since Swartz's specimen came from the Cape of Good Hope and indeed was collected 38 years before Lindley's Type of *M. micrantha.*

The citation of *M. bracteata* should therefore be as follows:

Monadenia bracteata (Swartz) Dur. & Schinz, Consp. Fl. Afr. 5: 111 (1894). Basionym: *Disa bracteata* Swartz, Vet. Acad. Handl. 21: 211 (1800).
  Syn: *Monadenia micrantha* Lindley, Gen. sp. Orch. pl. 357 (1838).
    : *Disa praetermissa* Schltr, Ann. Transv. Mus. 10: 246 (1924).
    : *Monadenia australiensis* Rupp, Aust. Orch. Rev. 11: 70 (1946).

Distribution: South West Cape Province, South Africa; South West - Western Australia between Albany and Perth where introduced and naturalised.

Acknowlegements.

I wish to thank Dr H.P. Linder, South African Botanical Liaison Officer at Kew for his helpful discussion on the content of this paper and Mr P. Taylor of Kew for comments on the manuscript.

References:

Bolus, H. (1888). The Orchids of the Cape Peninsula. *Trans. S. Afr. phil. Soc.* 5: 1-201.

Linder, H.P. (1981). Taxonomic Studies in the Disinae. V. A revision of the genus *Monadenia. Bothalia* 13 (3 & 4): 339-363.

Schlechter, R. (1924). Contributions to South African Orchidology. *Ann. Transv. Mus.* 10: 233-252.

12 April, 1983

c/o Royal Botanic Gardens,
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NOTES FROM NOSSA

The R.S. Rogers Orchid House.

The Native Orchid Society of South Australia, in a joint venture with the Australian Orchid Foundation, have established an Australian Terrestrial Orchid Shadehouse — called the "R.S. Rogers Orchid House" — within the Adelaide Botanic Gardens.

In a note for *The Orchadian,* Mr Bob Bates of NOSSA reports that, as it was completed as recently as March this year — a little late for repotting time — the number of donated "tubers" was necessarily limited at the outset. However some 35 species were potted up and placed in the new house to initiate the collection. NOSSA expects that it will exceed 100 species by next Summer (1983) when donations should roll in from all over Australia.

Readers in all States who are able to donate tubers might please note that tubers will be of greatest value if they are accompanied by the following data:

- Name of collector
- Date and place of collection

They should be posted to

Mr Don Wells, 86 Pitman Road, Windsor Gardens, South Australia, 5087.

Items of further interest from, Bob Bates, include the news that he has completed a revision of *Microtis* for publication in the Adelaide Botanic Gardens Journal; also that he has embarked upon a revision of the genus *Prasophyllum,* section *Euprasophyllum,* which is expected to take 4-5 years to complete.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the R.H.S. October 1982—from lists in the Orchid Review, *April 1983)*

NAME	PARENTAGE	REGISTERED BY
DENDROBIUM		
Eleebana	Judy Leroy *x bigibbum*	W.T. Upton
Peter Hewitt	Hilda Poxon x Hastings	W.T. Upton

NOTICE OF EXTRAORDINARY GENERAL MEETING OF ANOS MEMBERS

Members are advised that an Extraordinary General Meeting of the Society will be held on the morning of Saturday, 13th August 1983, at 10.00 a.m., in the Maiden Theatre, Royal Botanic Gardens, Sydney.

The purpose of this meeting will be to vote on the proposed changes to the Constitution, the details of which are set out in the "insert" to this issue (June 1983) of *The Orchadian.* A copy of the current Constitution is also included. The resolution to be considered is as follows:—

> "That the proposed amendments to the Constitution of the Society, as circulated to members with the June 1983 issue of *The Orchadian,* be and are hereby adopted into the Constitution of the Society."

Members may vote by being present at the meeting or by completing the Proxy Form as set out on Page 4 of the Constitution and lodging it with the Hon. Secretary not less than 48 hours before the meeting.

Should these amendments to the Constitution be adopted, then a meeting of ANOS Group and Affiliated Native Orchid Society Delegates will be held at 1.30 p.m. on the same afternoon.

M. Harrison, Honorary Secretary.

NOTICE OF ANOS ANNUAL GENERAL MEETING

Members are advised that the 20th Annual General Meeting of the Society will be held on the morning of SATURDAY, 13TH AUGUST 1983, at 10.30 a.m., or immediately following the abovementioned Extraordinary Meeting, in the Maiden Theatre, Royal Botanic Gardens, Sydney.

Members may vote by being present at the meeting or by completing the Proxy Form as set out on Page 4 of the Constitution and lodging it with the Hon. Secretary not less than 48 hours before the meeting.

Copies of the Financial Statement for the year 1981-82 will be available at this meeting.

P. Collin, L. Bradford,
Election Returning Officers.

SPRING SHOW AT GOSFORD

The ANOS Central Coast Group will hold its Annual Spring Show on Saturday, 3 September 1983, at the Scout Hall, Gertrude Place, Gosford. The Show will be open to the public from 10 a.m. to 5 p.m. and plants will be on sale. The Hon. Secretary is Mrs. D.P. Johnston of 158 Geoffrey Road, Chittaway Point, 2259.

IRA BUTLER TROPHY COMMITTEE ANNOUNCES 1982 COMPETITION: —RESULTS

The "Ira Butler Trophy Committee" announced on April 6 1983, the results of the 1982 Ira Butler Trophy Competition.

Ten entries were received, representing a substantial increase on the previous year.

Each entry received an Ira Butler Trophy in recognition of its having been previously judged Champion Australian Native Orchid Hybrid at a spring or winter show conducted by a State Orchid Society or ANOS Group.

Each of these entries was considered for judging in the competition for "Australian Native Orchid Hybrid of the Year 1982".

The ten recipients of an Ira Butler Trophy were:—

Recipient	*Plant Name*	*Society*
J.F. & B.M. Smith	Dendrobium Bardo Rose	Tasmanian O.S.
H. Goldsack	D. *X gracillimum*	NOSSA
L. & R. Moore	D. Bardo Rose "Keena"	O.C.S.A.
A. Van Bysterveld	*D. X superbiens* "Pauline"	Wollongong & District ANOS
Mr & Mrs Rankine	D. Hilda Poxon "The Lodge" HCC/OCSA	O.C.S.A.
Mr & Mrs D. Jones	D. Peach Glow	O.S. N.S.W.
Mr W. Upton	D. Hilda Poxon	ANOS Sydney & Warringah Groups (Spring Show 1982)
A. & B. Peck	D. Ellen	O.S. N.S.W.
F. & I. Chapman	D. (Ellen) *x tetragonum)* x falco*rostrum*	ANOS Central Coast
V. Trotman	*D. X delicatum*	The Victorian Orchid Club.

The Australian Native Orchid Hybrid of the Year for 1982 was Dendrobium Hilda Poxon grown by Mr W. Upton.

The rules for the 1983 competition are as follows:

ELIGIBILITY:

All entries must have been judged 'Champion Australian Native Orchid HYbrid' at either a winter or spring show conducted by a State Orchid Society or ANOS Group during the current year.

All entries conforming to this requirement automatically receive an 'Ira Butler Trophy'.

To be eligible for judging in the Ira Butler Australian Native Orchid Hybrid of the Year trophy, the entry must conform to the following requirements.

1. A minimum of three (3) transparencies showing
   a. front view of entire plant
   b. front view of the flower
   c. side view of the flower
2. Name of the plant's owner, and owner's address
3. Name of Society or Group submitting the entry
4. Size measurements of an individual flower
5. The hybrid need not necessarily have been created by the owner
6. The plant must have been judged 'Champion Australian Orchid Hybrid at a State Orchid Society or ANOS Group winter or spring show during the current year.
7. All entries must be accompanied by a properly completed entry form which shall be supplied by the 'Ira Butler Trophy Committee.'
8. All entires must be received by November 15, 1983
9. The judges' decision will be final, and no correspondence will be entered into.
10. Failure to comply with these rules will eliminate the entry from the judging of the Ira Butler Australian Native Orchid Hybrid of the Year Competition.

Nomenclature:

Plant nomenclature must be that which is detailed in 'A Checklist of Australian Native Orchid Hybrids' Second Edition September 1981, published by the Australasian Native Orchid Society, and subsequent registrations appearing from time to time in The *Orchadian.*

Entry forms.

Entry forms will be sent to all State Orchid Societies and ANOS Groups by mid-August, 1983.

NATIVE ORCHIDS OF WESTERN AUSTRALIA

- If you live in Sydney or will be there in August here is an opportunity for you! The Sydney Group of ANOS and the AOF, have arranged for a session with Ron Heberle of Albany, W.A. on **Friday, 12 August, 1983 at 8 p.m.** Members of Sydney Group: please note that the meeting time has been brought forward from the third to the **second** Friday on this occasion. (The AGM will be on the following day). Having seen the beautifully illustrated article on *Caladeria* in W.A. in *The Orchadian* Vol. 7, No. 4 (June 1982) you can now hear from the author, view his colour slides and discuss his field research. Sydney Group will provide supper and an appropriate venue at the **Ryde School of Horticulture, 59 Parkes Street, West Ryde.** Visitors especially welcome!

Who's Who

THE AUSTRALASIAN NATIVE ORCHID SOCIETY OFFICERS AND GROUP CONTACTS:

A.N.O.S. Council:
President: N. Hilliger; Vice-Presidents: F. Martin, M. Korsenowski; Secretary: M. Harrison; Treasurer: J. Moore; Councillors: B. Butler, D. McAlpine, M. Penberthy, Mrs M. Spence.

A.N.O.S. Groups and those Affiliated Societies extensively interested in Native Orchids:

NEW SOUTH WALES

- *Sydney Group.* Tel.: (02) 53 5956
  Meets 8 p.m. 3rd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- *Warringah Group:* Tel.: (02) 99 2468. P.O. Box 524, Dee Why, N.S.W. 2099.
  Meets 8 p.m. 2nd Thursday, the Thomas Vickers Memorial Hall, Cnr. Pitt and Grainger Roads, North Curl Curl.
- *Port Hacking Group:* Secretary: R.G. Napier. Tel.: (02) 524 9996. 12 Laguna Street, Carringbah. 2229.
  Meets 8 p.m. 4th Tuesday at Community Hall, Gymea Bay Road, Gymea.
- *Newcastle Group:* Tel.: 48 9109 — Meets 4th Wednesday, John Young Community Hall Thomas St., Cardiff.
- *Wollongong & District:* Secretary: Mrs E. Beileiter, 19 London Street, Berkeley, 2506.
  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- *Hastings Valley Group:* Tel.: (065) 85 6150 — Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Wauchope.
- *Central Coast Group:* Tel.: Secretary (043) 88 1785
  Meets 7.30 p.m. 2nd Wednesday at the Baptist Church Hall, Cnr. York & Frederick Streets, East Gosford.
- *Far North Coast Group:* Secretary: Graham Gamble Tel.: (066) 24 1023 Meets 8 p.m. 1st Thursday at Ballina High School, Swift Street, Ballina.

VICTORIA

- *Victorian Group:* Tel.: (03) 754 6585
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- *Darling Downs Group:* Secretary: Mr John Leyden, 66 Mort Street, Toowoomba, 4350. Tel.: (076) 34 2813.
  Meets 7.30 p.m. 3rd Friday at the Auditorium of the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- *Native Orchid Society of Queensland (Affiliated):* c/- P.O. Box 159, Broadway, Qld. 4006.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane. Contact June Crane (07) 378 2881.

SOUTH AUSTRALIA

- *Native Orchid Society of South Australia (Affiliated):* Secretary: E.R. Hargreaves. 1 Halmon Avenue, Everard Park, 5053 Tel.: (08) 293 2471 or 297 3724 — Meets 4th Tuesday, St Matthew's Hall, 67 Bridge St, Kensington.

WESTERN AUSTRALIA

- *W.A. Native Orchid Study and Conservation Group (Inc.) (Affiliated):* Tel.: (09) 337 9614
  Meets 3rd Wednesday at the Department of Agriculture's Film Room, Jarrah Road, South Perth.

NORTHERN TERRITORY

- *The Orchid Society of the Northern Territory (Affiliated):* Secretary: Mrs G. Heinemann, Tel.: 85 4624
  P.O. Box 38493, Winnellie, N.T. 5789

AFFILIATED SOCIETIES

NEW SOUTH WALES
Berowra & District Orchid Society
Blue Mountains & District Orchid Society
Corrimal Orchid Society
Cumberland Orchid Circle
Eastwood & District Orchid Circle
Hastings River Orchid Society
Illawarra & District Orchid Society
Ku-ring-gai Orchid Society
Manning River Orchid Society
Newcastle Orchid Society
Sutherland Shire Orchid Society
Tweed District Orchid Society

VICTORIA
Gippsland Orchid Society
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Orchid Society of Papua New Guinea

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A CHECKLIST OF AUSTRALIAN NATIVE ORCHID HYBRIDS

Second Edition — September 1981

This revised edition is now available from the Secretary, ANOS, P.O. Box C106, Clarence St., Sydney. N.S.W. 2000 at $1.50 per copy (postage included).

It is an essential handbook in 16 pages for those interested in breeding native hybrids. Recognised natural epiphytic hybrids are also included.

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September 1983

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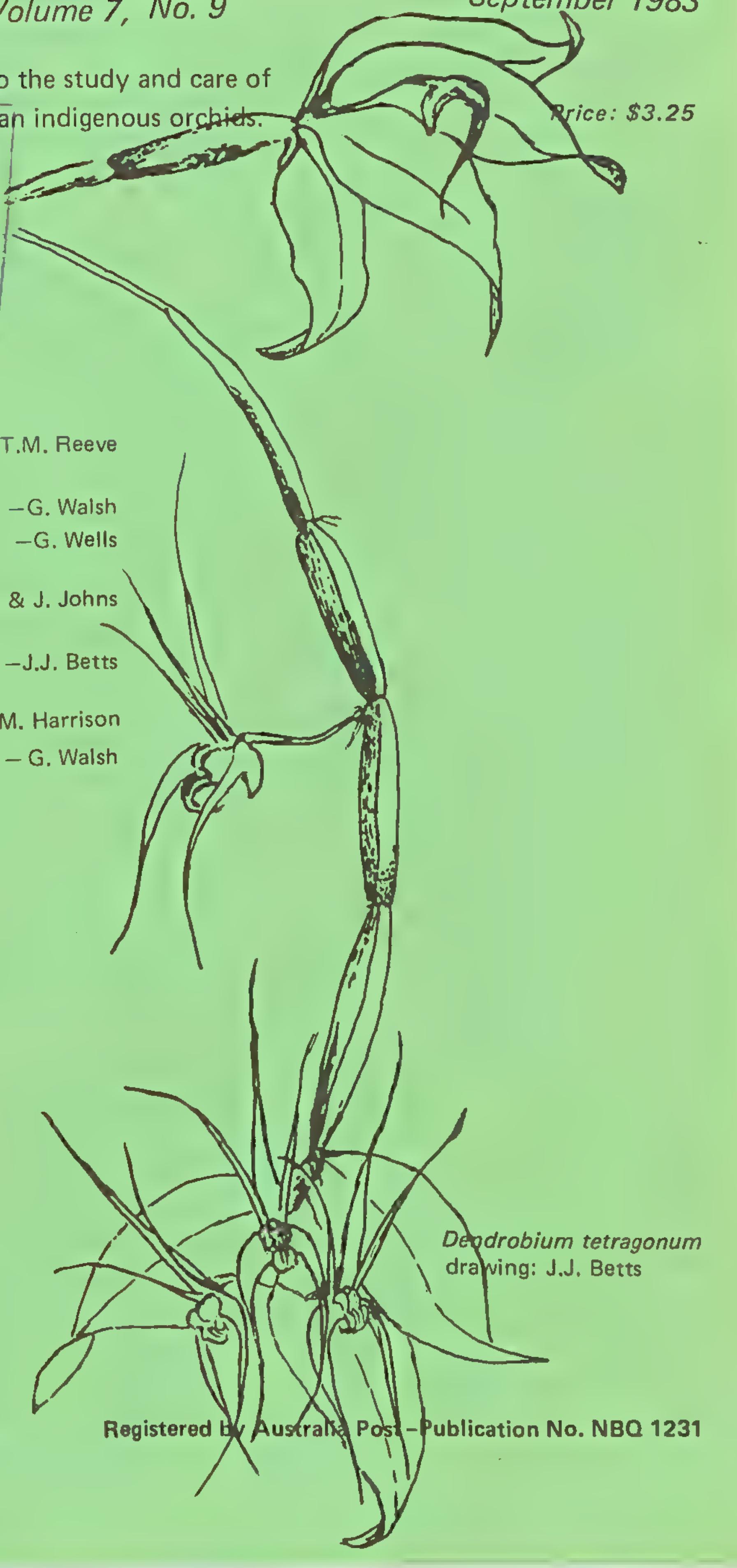

Dendrobium tetragonum
drawing: J.J. Betts

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On all editorial and advertising matters, announcements by Groups, Affiliates, etc. please write to: J.J. Betts, 33 Memorial Avenue, St. Ives, N.S.W. 2075.

Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

The busy time of year is upon us again. Early August, in Sydney, has been bitterly cold and cloudy at times and beautifully mild and sunny at other times. Cold or warm, our native species orchids know it is time to be on the move. They know, and we know, that Spring is only weeks away. For me the *Dendrobium speciosum* plants — four of the six varieties — are "springing" their racemes most urgently. *Var. speciosum*, the southernmost form, has the most inflorescences (up to a foot long by 10 August) but the north Queenslanders (*var. curvicaule* and *var. pedunculatum* with its purple stem and smaller buds) are lagging a little behind. All are fully exposed, all year, to the northerly sun. In the shade-house with its heavy shade, the first buds to appear have been on *D. ruppianum, D. tetragonum,* some of the many forms of *D. kingianum* and of course *Sarcochilus hartmannii;* but none of these seem as urgent as *D. speciosum* — surely the most "willing horse' ', and possibly the most beautiful orchid, in the world.

The Extraordinary General Meeting on 13th August rejected the proposed amendments to the ANOS Constitution in the form submitted but carried a number of amendments which achieved the "spirit" of the original proposal, while removing difficulties raised by certain speakers against the motion. Approval to the amendments was unanimous. In summary I can now report informally that there is to be a Policy Advisory Committee of delegates from Groups and Affiliated *Native Orchid Societies* (as listed in the revised "Who's Who" at p.223 of this issue); that the present "ANOS Council" will become the Executive Council comprising 12 members and continuing with its existing functions; that the Policy Advisory Committee will meet each year to formulate *advice* on policy and plans for the ensuing year; and that the Executive Council shall either act upon that advice or explain its reasons for not doing so at the end of its annual term of office. The general consensus was that an important step forward had been taken to give a voice to the widespread Groups and Affiliates both in the country areas and in other States.

- The A G M, which followed, was very well attended by country and interstate members. (Reports will be published in our next issue). Ten Councillors were elected — as listed on p.223 of this issue — and it is pleasing to see that four of these are from country areas, while the Vice-President (Peter Leithhead) is also president of the new Pt. Hacking Group.
- Finally, the Group delegates met for 2 hours during the afternoon for a forward-looking working session on policy questions. It would be premature to convey the subject-matter to readers at this stage as, of course, the delegates must report back to their Groups. It was a constructive and confident meeting.

Feedback and Follow-up

- John S. Womersley has completed the compilation of a comprehensive Index to Volumes 1 to 5 of *The Orchadian* and we are now ready to go to print with it. As a busy man and a professional botanist John Womersley has voluntarily given us long hours of meticulous work to produce this Index.
- The only bad news about the Index is that we now face up to high printing costs that were unfortunately never budgetted for by ANOS. We really do need sponsorship in this instance. All the goodwill in the world cannot substitute for the hard cash needed to print this Index. We have the choice of perhaps giving up one quarterly issue of *The Orchadian* or asking for advance payments by subscribers who need the Index. Elsewhere in this issue you will find a notice to the effect that we have adopted hopefully the second alternative.
- In saying that we need sponsorship I find myself wondering where ANOS has failed. Other societies, sporting clubs, Trusts for this and foundations for that, all seem to be able to get handouts either from hard-pressed Government sources or from big private enterprise. Why not ANOS? Perhaps we have had our priorities wrong. Being a national body with world-wide subscribers to our journal we can have no meeting place for regular fund-raising gatherings such as those available to our separate Groups and Affiliated Societies. Our subscription income is more than taken up in producing *The Orchadian.* Perhaps ANOS Council, comprising a handful of members drawn from the three Sydney Groups, has not had enough internal drive — or cunning? — to command sponsorship. Perhaps we have been wrong in giving priority to the publication of the results of years of field work and in thinking that documentation and the preservation of written material are just as important — or *more* important — than projects to improve the techniques for propagating exotic hybrids. Perhaps we should be devising techniques to get ourselves loved, and therefore sponsored, by commercial interests. It seems we need an image-maker — a voluntary one of course — on our Council. Meanwhile money is our problem — just a miserable few thousand (would you believe only two?) — to get this vital Index printed. We shall do it anyway; so please turn to the Notice on p. 222 and act accordingly to make it easier for our Hon. Treasurer to meet the bill and easier for yourself to find your way through volumes 1 — 5. Remember: future volumes, like Vol. 6, will be fully indexed and free to subscribers at the completion of publication.
- The year 1984 will see the twenty-first anniversary of the founding of ANOS; so plans are afoot for it to be celebrated around July with a seminar or "workshop". Details should be available in our next issue.
- *Corrigendum:* At p. 179 of the June 1983 issue, there is a typesetting error in the key. The fourth item in the key should be "2", not "3" as printed.

A REVISION OF *DENDROBIUM* SECTION *MICROPHYTANTHE*

by T.M. Reeve

Summary: *Dendrobium* § *Microphytanthe,* a small New Guinea Section with only three known species is revised. One new species, *D. margaretae* T.M. Reeve is described and illustrated.

Introduction: The genus *Dendrobium (sensu lato,* excluding *Cadetia)* contains approximately 30 sections and an estimated 350 species in New Guinea. In numbers of species this genus is second only to *Bulbophyllum.* To revise the entire genus will be an immense undertaking, and very likely a skilled taxonomist would require the best part of a lifetime to do it properly. Even then he would need the fullest co-operation from a widely scattered band of collectors and growers who could provide plants, specimens, photographs and notes to assist in the study.

However New Guinea and its adjacent islands contain a sufficient number of endemic or almost endemic sections for a satisfactory regional revision of *Dendrobium* to be attempted. Certain sections such as *Aporum, Desmotrichum, Distichophyllum, Euphlebium, Grastidium, Oxystophyllum, Pedilonum* and *Rhopalanthe* occur throughout several regions (with species often widely distributed also) and full clarification of the earliest names will not be possible without a wider study. Despite this drawback it will be useful to have an updated reference for the New Guinea species, with keys, until such time as a Monograph is completed.

This revision of *Dendrobium* section *Microphytanthe* is one of several taxonomic studies in preparation for a volume on *Orchidaceae* (Part 1) in the series of *Handbooks of the Flora of Papua New Guinea**. These volumes cover the Papuasian region of New Guinea, the Bismarck Archipelago and the Solomon Islands.

For reasons to be outlined in a later paper the recent subdivision of *Dendrobium* by Brieger (1981) is not accepted, and the arrangement made by R. Schlechter, with minor modifications, will be followed.

Dendrobium: (A key to the New Guinea sections is in preparation).

Section **Microphytanthe** Schlechter in *Fedde Rep. Beih.* 1:442,443, 457-459 (1912).

Microphytanthe (Schltr) Brieg. in *Schlechter, Die Orchideen* ed. 3, 1 (11 & 12): 742 (1981).

Small creeping epiphytic *herbs*, with distinct rhizomes and spaced 1-leaved pseudobulbs resembling some members of the genus *Bulbophyllum. Pseudobulbs* small, obliquely ovoid to oblongoid or cylindrical, with rhizome deeply adnate. *Leaves* shortly petiolate, ovate, elliptic or oblong, obtuse to apiculate, thick, up to 24 x 11 mm (but usually much smaller). *Inflorescence* single-flowered with one or two pseudobulbs arising from near the leaf base; *bracts* minute. *Flowers* small, 7-14 mm diameter, resupinate, of comparatively simple structure (allied to *D. lichenastrum* (F. Muell.) Kraenzl and *D. toressae* (F.M. Bail.) Dockr. of Australia), yellowish, orange or maroon, lasting *c.* 10-24 days. *Sepals* short, broad, with relatively large mentum. *Petals* small. *Labellum* hinged, without prominent calli, not trilobate although the apex may be lobed. *Pollinia* yellow.

Lectotype species: *Dendrobium bulbophylloides* Schltr in *Fedde Rep. Behi.* 1: 457 (1912), chosen by Brieger in *Schlechter, Die Orchideen* ed 3, 1 (11 & 12): 742 (1981).

Distribution: This section is recorded only from the mainland of Papua New Guinea with 3 species occurring from 400 up to 2750 m.

§ *Microphytanthe:*

D. bulbophylloides	12 - 24 days
D. margaretae	10 - 18 days

Ecology: This group of epiphytic orchids usually grows on the trunks and large branches of trees, particularly *Castanopsis*, in semi-open forest. At high altitudes *Northofagus* is a common host tree also.

Notes: When not in flower the species of section *Microphytanthe* would be passed by as insignificant *Bulbophyllum* species unless a careful observer noted the small dried flower stalks arising, not from the rhizome but from the apices of the pseudobulbs.

Schlechter when he founded this new section in 1912 was uncertain of the longevity of the flowers and placed it next to *Desmotrichum* and *Diplocaulobium,* both sections with short-lived flowers. However Schlechter did suggest that if the flowers were not ephemeral, § *Microphytanthe* should be placed near to §*Rhizobium.* It is now known that the flowers last up to 3 weeks and probably the nearest allies are the 2 smallest *Dendrobium* species from Australia, *D. lichenastrum* and *D. toressae* (which are broadly classified under section *Rhizobium).*

At Laiagam measurements have been made of the longevity of *Dendrobium* flowers and the following list shows some of the results.

§ *Rhizobium:* (Australian *spp.* —only a few flowers counted)

D. lichenastrum	12 - 18 days (eaten off?)
D. toressae	12 - 47 days

§ *Diplocaulobium:* (including *Goniobulbon)*

D. aratriferum	1 day
D. centrale	1 day
D. chrysotropis	3 - 6 days
D. iboense	1 day
D. mekynosepalum	1 day
D. regale (white)	1 day
D. regale (red)	3 days
D. tentaculatum	1 day

The study of this section has been hampered by the lack of Type material. Apparently all of the *Schlechter* specimens were destroyed at Berlin in 1943 and there were no duplicates deposited elsewhere. Whilst *D. bulbophylloides* has been collected several times since, the second Schlechterian species *D. nummularia* has yet to be rediscovered.

---

*Two volumes (1978, 1981) dealing with other New Guinea plant families have been published already by the Melbourne University Press on behalf of the Government of Papua New Guinea.

Key to the Species: The shape of the labellum is the main key character — refer to *Figure 1.*

1. Labellum apex distinctly emarginate with an apiculum (short point (between the apical lobes; margins of the lobes finely ciliate . . . . **D. nummularia**
1. Labellum apex not emarginate or only slightly so, with no apiculum; margins not ciliate
2. Pseudobulbs with 1 inflorescence only; labellum with marked transverse thickening in the centre and apical section suborbicular. . . . . **D. bulbophylloides**
2. Pseudobulbs each developing 2 successive inflorescences; labellum not markedly thickened in the centre and apex slightly bilobed . . . . **D. margaretae**

1. **Dendrobium bulbophylloides** Schltr in *Fedde Rep. Beih.* **1**: 457 (1912) et in *Fedde Rep. Beih.* **21**: Fig. 576 (1928)—non J.J. Smith, 1913.

Microphytanthe bulbophylloides (Schltr) Brieg. in *Schlechter, Die Orchideen* ed. 3,**1** (11 & 12): 742 (1981).

Description: Small creeping epiphytic *herb* up to 3 cm high, often forming large mats on tree trunks. *Roots* glabrous, white with pink tips, 0.5-1 mm diameter. *Rhizomes* branched, 0.7-2 mm diam., with pseudobulbs spaced 5-28 mm apart. *Pseudobulbs* obliquely oblongoid to cylindrical, grooved on the lower side where adpressed with rhizome, 1-leaved, brown to reddish-brown or greenish, 4-10 x 2-6 mm. *Leaves* shortly petiolate, erect to semi-erect, ovate elliptic to oblong, apex obtuse sometimes unequally bilobed or apiculate, thick and fleshy, 6-20 x 3-11 mm. *Inflorescences* single-flowered, one per pseudobulb, arising from the apex at the back of the leaf petiole on fairly new pseudobulbs; *peduncle* 4-5 mm long, persistent; *bracts* very small. *Flowers* small (but proportionately large for the size of the plant), glabrous, dull orange to maroon (with labellum darker maroon ± shiny on upper surface), 9-14 mm diameter, lasting 12-24 days. *Dorsal sepal* broadly ovate, obtuse to apiculate, 5-7 x 4-5.5 mm; *lateral sepals* obliquely triangular-ovate, subacute, 8-10 x 5-6 mm, with base forming relatively large mentum 5-7 mm long. *Petals* small, narrowly oblong-elliptic, acute, 3.5-5 x 1.5-2 mm. *Labellum* hinged, contracted towards base with transverse (somewhat bilobed) thickening at centre and dilated distal section suborbicular, apex obtuse to slightly apiculate, 7-8.5 mm long with base 2-2.5 mm wide and upper part 3-5.5 mm wide. *Column* short, greenish, *c* 2 x 2 mm; *column foot* dished, maroon or orange with maroon spots, *c.* 5 x 2.5 mm; *anther* very small, whitish or yellow, *c.* 1 x 1 mm; *pollinia* yellow, *c.* 0.5 mm long. *Ovary/pedicel* greenish, curved, 8-13 mm long.

Original Syntypes: *Schlechter* 17709 (B, destroyed); *Schlechter* 18247 (B, destroyed).

Neotype (here designated): Papua New Guinea: Eastern Highlands Province: Lufa District, above Lufa Government station, 2100 m, January 1980, *Reeve* 325 in LAE.

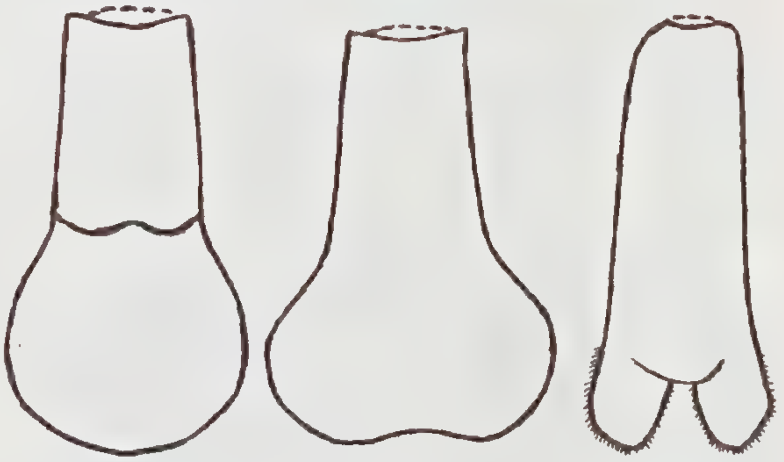
Isoneotypes: CBG, E, K, L.

Distribution: *D. bulbophylloides* appears to be the most widely distributed member of this section and has been found in the montane zone of Papua New Guinea from Laiagam to Garaina between 1000 and 2750 m. The details of collections in herbaria are as follows:

Madang Province: Kani Mountains, 1000 m, May 1908, *Schlechter* 17709 (B destroyed); Finisterre Mountains, 1200 m, September 1908, *Schlechter* 18247 (B, destroyed).

Morobe Province: Wau District, Mt Kaindi (northern slopes), 2000 m, May 1981, *Reeve* 809 (LAE).

Figure 1. *Dendrobium* Section *Microphytanthe:* A Comparison of Labellums. (X 6)



D. bulbophylloides (From R.325) *D. margaretae* (Type R.707) *D. nummularia* (After Schlechter)

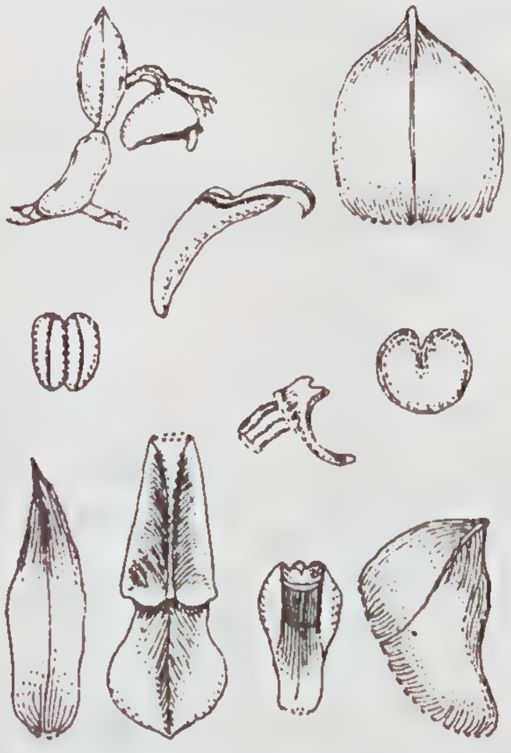


Figure 2: *Dendrobium bulbophylloides* as illustrated by Schlechter in Figuren - Atlas No. 576.

Eastern Highlands Province: Goroka, 1600 m (cultivated), *Chadim* 150 (LAE); Daulo Pass, 2750 m, September 1969, *A. Millar* NGF 38315 (LAE); Lufa District, above Government station, 2100 m, January 1980, *Reeve* 325 (CBG, E, K, L, LAE).

Western Highlands Province: Kundip near Mt Hagen, 2100 m, September 1963, *Millar & Garay* NGF 18709 (LAE).

Enga Province: Wabag District, Lakolama 2400 m, February 1983, *Reeve* 1027 (K, LAE, NSW).

Notes: This species is not to be confused with the later homonym *D. bulbophylloides* J.J. Smith, a species belonging to section *Diplocaulobium* and which has been renamed as *D. kirchianum* Hawkes & Heller (1957).

D. bulbophylloides is slow and often difficult to establish in cultivation but is easier if a piece of bark upon which the plant is growing is collected and mounted on to the tree-fern slab or post. Once established it is a vigorous epiphyte and at Laiagam prefers about 30% shade. The main flowering season here is usually from December to February.

2. **Dendrobium margaretae** T.M. Reeve *sp. nov.* simile *D. bulbophylloidi* Schltr est sed pseudobulbis parvioribus binis inflorescentiis monanthis aperientibus successive, floribus parvioribus colore flavido et labello sine callis apice bilobato leviter, differt.

Description: Small creeping epiphytic *herb* up to 3 cm high, often forming large mats on tree trunks. *Roots* glabrous, white with green tips, 0.5-1 mm diameter. *Rhizomes* cylindrical, branched, with pseudobulbs 5-15 mm apart. *Pseudobulbs* obliquely ellipsoid to oblongoid becoming rugose (± 5-angled) with age, grooved on the lower side where adpressed with rhizome, 1-leaved, greenish to brown, 3-7 (-9) x 3-5.5 mm. *Leaves* shortly petiolate, erect to semi-erect, ovate to elliptic, subacute (sometimes apiculate), thick and fleshy, mid to dark green sometimes tinged purplish, 6-16 (-24) x 4-7 (-11) mm. *Inflorescences* single flowered, with 2 successive inflorescences on each pseudobulb, arising from near the base of the leaf petiole; *peduncle* reasonably persistent, 3-4 mm long; *bracts* minute. *Flowers* small, glabrous, yellow with greenish to maroon ovary and mentum, labellum maroon with dark yellow apex, 7-11 mm diameter, lasting 10-18 days. *Dorsal sepal* broadly ovate, obtuse to subacute, 3-4.5 x 3-4 mm; *lateral sepals* obliquely triangular-ovate, 6-8 x 4-4.5 mm, forming relatively large mentum 4-5 mm long. *Petals* small, 2.5-3 x 1-1.5 mm. *Labellum* hinged, not curved in sideview, attenuated at base with dilated apex slightly bilobed (subreniform), 6.5-7.5 x 4.5-5 mm. *Column* short, yellowish, *c.* 2 x 1.5 mm; *column foot* dished, maroon, *c.* 4 x 2 mm, *anther* yellowish, *c.* 1 x 1 mm; *pollinia* yellow, *c.* 0.4 mm long. *Ovary/pedicel* curved, 7-11 mm long; *fruit* somewhat triangular in cross-section.

Holotype: Papua New Guinea: Enga Province, Porgera District, Waimeram in Paiela Census Division (5° 25′ S, 143° 00′ E), 1800 m, epiphytic on *Castanopsis,* July 1982, *Reeve* 707 in LAE.

Isotypes: AMES, BISH, BO, CBG, E, K, L, NSW, UPNG.

Distribution: This new species has been collected at several localities in the Enga, Southern Highlands and Eastern Highlands Provinces of Papua New Guinea from 1500 to 2000 m. It is reported to grow up to 2500 m in the Paiela area but this has to be verified. The details of the other collections are as follows:

Enga Province: Lagaip District, Winjaka, 2000 m, July, 1980, *Reeve* 808 (LAE).

Southern Highlands Province: Tari District, Hawa, 1700 m, December 1982, Reeve 1040 (LAE); Dauli, 1500 m, March 1983, *Reeve* 1046 (K, LAE).

Eastern Highlands Province: Benabena District, Namaro, 1800 m, April 1981. *Reeve & Cruttwell* R. 810 (LAE).

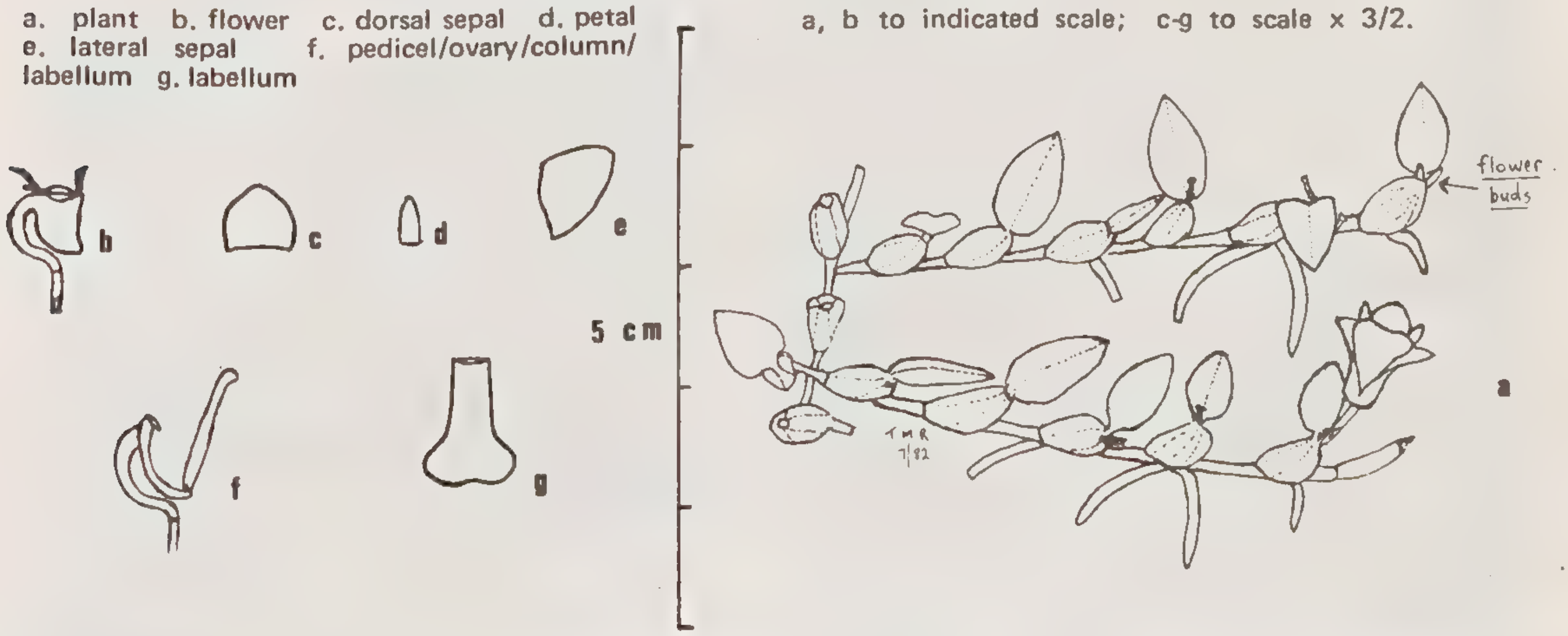
Notes: *D. margaretae* is quite similar to *D. bulbophylloides* but it is distinguished by the smaller pseudobulbs, the paired inflorescences (two per pseudobulb opening successively), the yellow colour of the smaller flowers and by the different labellum shape.

In the Paiela area this speces is quite common and mainly grows as an epiphyte on *Castanopsis acuminatissima,* the New Guinea oak tree. Again, this species is

Figure 3: *Dendrobium* sp. nov. (§ *Microphytanthe*)

a. plant b. flower c. dorsal sepal d. petal e. lateral sepal f. pedicel/ovary/column/labellum g. labellum

a, b to indicated scale; c-g to scale x 3/2.



Dendrobium margaretae T.M. Reeve drawn from the Type (*R.*707) rather difficult to establish but once growing well it is quite vigorous and does best under about 30% shade. At Laiagam the flowering tends to be non-seasonal, with the individual flowers usually lasting 10-14 days, occasionally longer.

In full flower *D. margaretae* is a charming species and I am pleased to be able to name it in honour of my mother, Mrs Margaret Reeve of Campbelltown, New South Wales (formerly of Paisley, Scotland).

3. *Dendrobium nummularia* Schltr in *Fedde Rep. Beih.* 1: 458 (1912) et in *Fedde Rep. Beih.* 21: Fig. 577 (1928).

Microphytanthe nummularia (Schltr) Brieg. in *Schlechter, Die Orchideen* ed. 3, **1** (11 & 12): 742 (1981).

Dendrobium prorepens Schltr in *Fedde Rep.* **16**:114 (1919).

Description: Very small prostrate epiphytic *herb* up to 3 cm high. *Pseudobulbs* ovoid-oblongoid and somewhat flattened with the rhizome deeply adnate, 1-leaved, 3-7 x 1.5-3 mm. *Leaves* shortly petiolate, erect to spreading, ovate, elliptic or oblong, obtuse to apiculate, 4-8 (-17) x 2.5–4.5 (-7) mm. *Inflorescences* single-flowered, arising from the apices of the pseudobulbs; *bracts* minute, deltoid. *Flowers* relatively large for the size of the plant, dark violet with yellow tips to the tepals and labellum, 9-12 mm diameter. *Dorsal sepal* ovate, obtuse, *c.* 4.5 mm long; *lateral sepals* obliquely ovate-triangular, *c.* 8-10 x 5 mm, with base forming relatively large obtuse mentum *c.* 5.5 mm long. *Petals* narrow, obliquely linear, obtuse to subacute, *c.* 4 mm long. *Labellum* cuneate-linear, apex distinctly emarginate with short thickened point (apiculum) between the lobes (see illustration of whole flower in Fig. 4), lobes square to suborbicular, very blunt, finely ciliate along the margins of the 2 lobes otherwise glabrous, *c.* 7 x 3.25 mm. *Column* short; *foot* concave, *c.* 5 mm long; *anther* rotund, cucullate. *Ovary* shortly pedicellate, glabrous, *c.* 4-6 mm long.

Holotype: Papua New Guinea: Morobe Province, Jaduna in Waria valley, 450 m, May 1909, *Schlechter ? (B,* destroyed).

Paratype: West Sepik Province: Torricelli Mountains 800 m, Septembe 1909, *Schlechter* 20181 (B, destroyed).

Distribution: This uncommon species has been collected only in the Morobe and West Sepik Provinces of Papua New Guinea from 450 to 800 m.

Notes: All the material collected by Schlechter was apparently destroyed at Berlin in 1943. The holotype specimen of *D. prorepens,* also collected in the Waria valley area by A. Kempf, is presumably missing as well. No further collections have been made of *D. nummularia* and the lower Waria valley would certainly be a profitable area to conduct an expedition to try to collect several uncommon species including this one and the impressive *D. alexandrae* Schltr of section *Latouria.*

*Although we coll*ected for 3 weeks in the Torricelli Mountains in 1981, this species was not rediscovered there. Presumably it is relatively uncommon, or maybe because of its small size, difficult to see on the taller and larger trees of the lowland forests.

As well as being a lowland species *D. nummularia* differs markedly from the other two members of this section in the shape of its labellum.

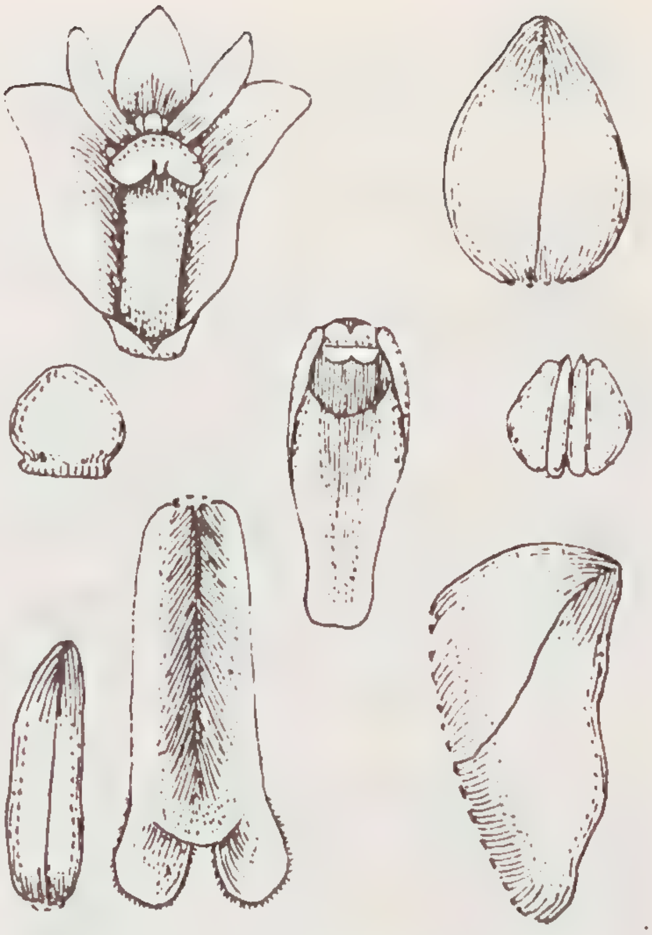


Figure 4: *Dendrobium nummularia* as illustrated by Schlechter in Figuren-Atlas No. 577.

Acknowledgements: I wish to thank Mr E.E. Henty, Senior Botanist with Department of Primary Industry, for checking this manuscript and for providing some details on the collections at LAE herbarium, and also Mr J.J. Betts for his help with the English-Latin translation of the diagnosis for *D. margaretae* T.M. Reeve, *sp. nov.*

References:

Brieger, F.G. (1981). 39. *Substribus: Dendrobiinae.* In *Schlechter, Die Orchideen,* 3 Auflage, Band **1**, Leferung 11 and 12: 742 (Verlag Paul Parey, Berlin und Hamburg).

Hawkes, A.D. & Heller, A.R. 1957). Nomenclatorial notes in the *Dendrobium* Alliance. *Lloydia* **20**: 121.

Schlechter, R. (1912). Die Orchidaceen von Deutsch-Neu-Guinea. *Fedde Rep. spec. nov. regni veg.* Beihefte Band **1**: 442, 443, 457-459.

Schlechter, R. (1919). Additamenta ad Orchideologiam Papuanum. *Fedde Rep. spec. nov. regni veg.* 16: 114.

Schlechter, R. (1928). Figuren-Atlas zu den Orchideen von Deutch-Neu-Guinea. *Fedde Rep. spec. nov. regni veg.* Beihefte Band **21**: Tafel CLIV, Figuren 576, 577.

Smith, J.J. 1913). Vorlaufige Beschreibungen neuer Papuanischer Orchideen X. *Fedde Rep. spec. nov. regni veg.* **12**: 31.

April 1983

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CONSERVATION

THE TOOTHPICK
— Tool of Conservation — or of Confusion?

by Gerry Walsh

There are some things in this world that will never be changed, either by public opinion or government legislation. Some good examples are drinking and driving, gambling, swearing and smoking. And what about those ladies of the night who practise the oldest of all professions? These are things that exist in our society and are tolerated despite the fact that most of them are undesirable. I have been guilty of some of these things at one time or another, and so I have given up all hopes of being canonised. There is another bad habit of which many Australians, and particularly native orchid enthusiasts are guilty. I am speaking of the pilfering of protected plants from the wild.

This is something I believe most of us have been guilty of at some time, even if only in a very small way. It is one of those controversial subjects which is all too often swept under the rug; and with good reason. It is difficult to discuss such a topic because no one likes admitting to being guilty of it. Even as I write, I have reservations about tactfully discussing such a "hot potato". My biggest fear is that I may unintentionally offend some readers. I sincerely hope I do not.

It is my belief that the removal of protected flora from the wild will never be effectively prevented. Since the beginning of civilisation, Man has utilised nearly all the components of both the animal and the plant kingdoms in the never ceasing attempt to improve his living conditions. The desire to surround himself with things of beauty led Man into the world of plants; for here was beauty in plenty. Expeditions set forth to explore new lands for new species, especially in the tropic zone and, more especially, the *Orchidaceae.* And that is still the way we think today. We all enjoy the beauty of orchids, and because our "natives" have no less beauty than those from elsewhere, we continue to surround ourselves with them.

But, to me, there is nothing to compare with the beauty that can be seen by those who search out and find our native gems in their chosen environment. There is surely more beauty on an escarpment covered in *Dendrobium kingianum,* or a gnarled old tree encrusted with *Sarcochilus falcatus,* than there is in a hundred pots or mountings of the same plants in a bush-house. We resort to these pots and mountings because few of us are fortunate enough to live in a rainforest or on an escarpment. Pots and mountings provide the means to enjoy our orchids every day of our lives, and to compare, display and swap them. They provide the only tangible answer to the impractical alternative of turning our backs on civilisation and living in isolation among the orchids. Most of us, and I myself in particular, go wobbly at the knees at the thought of a trip into the bush. To gaze at the splendour which Nature produces, and to study and absorb every detail that may enable us to grow our potted and mounted specimens just so much better.

But there is an ugly side to all this activity. Some escarpments no longer play host to our orchids and it is becoming harder and harder to find a tree loaded with *Sarcochilus falcatus.* Most of the more accessible regions have been frequently visited by all kinds of collectors: professional plunderers with chain saws, hobbyists with sugar bags, sightseers with camera cases, picnickers with "eskies", old ladies with string bags, and so on. All these groups represent varying degrees of plant pillage. Some are almost harmless; some are purely destructive. By now, many readers are probably rolling their eyes back and thinking that they have heard it all before. Some are possibly thinking that I am surely as guilty as anyone else. So what gives me the right to deliver a sermon on the subject? Well, let me say here and now, that I do not intend giving a sermon. That would be very hypocritical of me. You see, I am guilty of the crime also. Over the years, I have removed the odd plant from the wilds and, when the situation warranted it, more than just the odd plant. Having placed my head on the chopping block, I will now attempt to present my thoughts, without sermonising, and with total honesty.

Not long ago, I visited a large forest of *Nothofagus moorei* (Niggerhead Beech) on the N.S.W. north coast. While driving along the narrow track that snaked its way between the gigantic trees, my progress was abruptly halted. A beech of enormous proportions had crashed along the track, the legacy of a week's heavy rain which was still falling even as I peered through the mud-spattered windscreen. The rain had obviously loosened the soft soil anchoring the massive root system.I wondered for how many centuries that giant had withstood the ravages of nature before finally succumbing. There is something about a beech forest which demands awesome reverence from a mere mortal; and that feeling is amplified when viewed on a cold Winter's day, with the rain, fog and silence combining to conjure up the eeriest of atmospheres. I climbed out of the car for a closer inspection. On the far side of that massive trunk, out of view from the car, I found masses of *Dendrobium falcorostrum* — enough to fill a couple of utility trucks. Many were squashed under the trunk. Some were torn off the trunk as it fell and were strewn over the ground. Needless to say, I was in an excitable state.

What did I do? After having a good look around, I jumped into the car, did a ten-point turn, and drove away without touching a single orchid. Do you believe that? If you do, you have probably been sold the Sydney Opera House at some time. Naturally I took a few home with me. What would be their future if left on the ground? Wallabies had already made a salad of some of them; lack of light would account for many others. Forestry workers clearing the road would either cut them up with chain saws or make a few dollars by selling them to the local nursery. I think it is true to say that, if left there, they would perish one way or another. If taken away and properly cared for, they would grow and multiply for years to come. I am convinced that my taking some was the proper and most logical course of action. I hope that after my visit some other orchid lover came along and removed the ones that I left there. What would you have done? And what would Mr Ranger have said if he had seen me in action? It would depend on his personality and attitude I guess. After this public confession, I may get a visit from him. But nonetheless, I will continue to collect such plants, with or without legal or public sympathy. Unfortunately, some people explain away all their plants by using the casualty-of-nature excuse.

Now it is time for a few words on that taboo topic concerning the removal of plants from their hosts when they are not casualties of nature. Here is where the real crimes are committed. As I stated before, I don't believe the practice can be totally stopped, regardless of how much hot air rises from orchid society meetings, or how many words are published in the name of conservation. But I believe the adoption of a few sound practices will go a long way towards compensating for those plants which unscrupulous people remove. So if you know any unscrupulous people, show them this article. Mind you, ANOS members may find it boring, because we do not lack scruples. Everyone knows that, don't they?

The Toothpick Plan

I have a pet plan which, for want of better title, I shall refer to as the "Toothpick Plan". In the Spring, when I make most of my trips into the bush, I take a few toothpicks along for the purpose of pollinating many of the orchids I find. a toothpick is just the right tool for such an exacting job. It is surprising how hard it can be to locate just the right twig when you need one. I usually pollinate two flowers per raceme. It would not be uncommon for me to pollinate two hundred flowers during a day's meanderings. I guess there are millions of seeds floating around each year for which I am responsible. I also carefully collect the seed from the many pods which appear on my own orchids every Spring. This seed is distributed into a couple of my favourite areas year after year. Many seedlings can be seen in these areas. Of course there is no proof that they are the result of my efforts. My dearest wish is to start a colony of *Dendrobium kingianum* in an area south of Sydney where it does not naturally occur.

Just for argument's sake, let us assume that I am responsible for 10,000,000 orchid seeds a year. At a germination rate of only 0.00001% we are left with 100 seedlings. At a survival rate of only 10% we are still left with about 10 orchid seedlings that will grow to maturity. I am sure that the number of seeds on which I based these figures would be ten times the 10,000,000 I have quoted. But in an effort to be super-cautious I will stick with a conservative 10,000,000. Ten orchids would be ample reward for the effort involved, and if we all practised the "Toothpick Plan" the results would be quite encouraging. Obviously, the variables in such a theory are enormous, but some measure of success must be the end-product. Perhaps a reader with greater knowledge than myself would care to comment on my figures? I would be very interested. Orchid groups could possibly organise pollination days in the field. What a change that would be! And what about everyone collecting their unwanted pods and, after they ripen, arranging for an industrious member to take the seed to a cliff line above a suitable gully for distribution. I cannot think of one bad aspect of the "Toothpick Plan", so next time you go bush, do something for the orchids for a change.

The second thing I like to do for the orchid world involves the re-establishment of casualties. I could not begin to count the number of orchids that I have re-established from tiny *Sarcanthinae* species to massive clumps of *Dendrobium speciosum.* The simple act of placing a fallen plant in the fork of a suitable host tree is often sufficient to allow it to grow on happily and indefinitely. In later years it is really satisfying to revisit the area and see the fruits of your previous labours. How many times have you tramped along a creek and found clumps of orchids wasting away on the ground? The law says you must not remove such plants, but makes no mention of re-establishing them. You would be performing a service of tremendous value if you spent some time re-establishing them. All you need is a ball of ordinary string (assuming the plants are epiphytic). Just tie a plant to a tree that receives adequate light. Along a watercourse is a logical spot. A good wad of moss can always be found to pack underneath to aid in moisture retention. I have found trees with trunk diameters of less than 30cm to be the most suitable foster hosts. Make sure you place the plants high enough to exclude wallabies.

Most orchids respond well to re-establishment, including nearly all the members of the *Dendrobium* genus, although *D. tenuissimum* is not easily persuaded to grow on. Most *Sarcanthinae* species adapt very well to foster hosts with the exception of *Sarcochilus hillii. Bulbophyllum elisae* is the only member of its genus to respond well to re-establishment. The other Bulbophyllums I have worked with never seem to do very well. One wonders if it is worth taking the trouble with this genus, as most of its species grow so profusely that any attempts at re-establishment are only a drop in the proverbial bucket.

Lithophytic orchids are very suitable for re-establishment and the task is easily performed. Just pick them up and place them on a flattish section of stone, or jam them in a crevice, or between rocks. A few small stones strategically placed may also be necessary. A double handful of leaf litter in and around the roots will be appreciated. I have found most rock dwellers amenable to re-establishment, especially *Dendrobium speciosum. D. kingianum* is slow to establish, but is capable of surviving the long period without anchorage.

Down in the Illawarra, I have a favourite gully. It is very similar to the famous Minnamurra Falls Reserve and if you have ever visited Minnamurra you will have an appreciation of the beauty of my gully. Rainforest, elkhorns, birdsnest ferns, orchids and waterfalls; they are all there in abundance. The gully is tucked away from the sight of roads, and I have never seen any evidence to suggest that anyone but myself has ever entered its glory. There are twelve species of naturally occurring epiphytic orchids growing here and I have introduced a further seven species which do not extend naturally south of the Hunter River barrier. They are all making great progress in their new home. I hope to add more species as time goes by, or when the need arises. All the introduced species would certainly be dead now had I not rescued them from oblivion and delivered them to greener pastures. Some of them have been living in this new home for five years now and are totally assimilated. I suppose some botanist of the future will have heart failure when he discovers this extension of the distribution of so many species.*

Next time you come across fallen orchids, take the time to re-establish them, or at least some of them, even if it seems like too much hard work at the time.

I believe that as long as we are all prepared to devote time and effort to such things as orchid re-establishment and the "Toothpick Plan", we shall go a long way towards compensating the orchids which are vandalised by those people who take all and give nothing. And in the final analysis, you must be honest with yourself, because although you may fool everybody around you, you cannot fool yourself. Do the right thing!

July, 1983

55 Pembroke Street,
Cambridge Park, N.S.W. 2750.

*Editorial note: This is very true. I expect the frank confessions in this article to draw some hostile comments—which, of course, I shall publish.

LORD HOWE ISLAND: A Problem

by Garry Wells

The weather can be fabulous or 'lousy'; the locals can be grumpy or very pleasant; but this tiny coral and volcanic rock — a dot in the ocean, 400 miles east of Port Macquarie, appeals to the fisherman, bushwalker, naturalist, surfer, mountain-climber or the plain tourist. They invariably return whenever possible.

The fauna and flora, including the orchids of course, which have affinities with those of New Zealand, New Caledonia and Australia, are often endemic and, since they are found nowhere else, their survival is a delicate arrangement. All the more so since the introduction of cats, owls, goats, pigs, rats, kikuyu grass, guavas and even Norfolk Island pine trees. These were all imported in ignorance of this tiny island's fragility. Much is written of the now apparently successful struggle to stop the destruction of the Lord Howe woodland but I'd like to discuss the orchid component of this disturbed equilibrium.

Dendrobium moorei, the first orchid to receive an Award of Botanical Merit by the American Orchid Society, is only found here. I have seen it only at the mountainous end where Mts Lidgbird and Gower spring out of the sea, towering to 2,800 feet. *D. moorei* flowers up to nine months of the year and is unusual in that the labellum is pretty well identical to the other segments. Its glistening crystalline white flowers can still be seen on the hard rock-face or in the amazing stunted, moss-covered forest on the top of the mountains. Yet goats and pigs released by whalers and sailors many years ago, still wander the slopes, the pigs causing erosion and the goats browsing the herbage; and where this includes *D. moorei,* individual plants may be continually debilitated — perhaps terminally.

D. gracilicaule var. *howeanum,* too, is found only on the island, much more widespread and easily seen from the walking track than *D. moorei.* Huge clumps are common. It is interesting to see how epiphytes may adapt to an environment lacking in small, ground-dwelling animals. Large plants of this orchid fall to the ground where they settle in nicely and often grow to perfection. Mainland epiphytes have to survive wallaby browsing, but these orchids do not have that problem. Or at least, this was so. It has been suggested that goats have been eradicated from the low north end of the island. It was apparent however from gnawed branches and damaged *D. gracilicaule* that some introduced animal is still active. This varietal form is very desirable horticulturally, having bright, unspotted, large, quite widely opening flowers of good texture. There appears to be quite a lot of clonal variation.

Uncommon but widespread is *Bulbophyllum tuberculatum,* which was recently discovered in N.S.W. (*Orchadian* Vol. 6, No. 6, p. 136). The modest racemes are quite attractive with green-yellow flowers that do not open widely. They can be seen around June. On Lord Howe this species seems to favour dryish sites in scrubby trees up to perhaps 20 feet, whereas the N.S.W. plants attained the same habitat conditions by growing on the upper parts and branches of the rainforest trees. It certainly seems to require plenty of air movement living as it does on the trunks and branches of trees on this very windy island. I would guess that its arboreal existence guarantees its survival.

Plectorrhiza erecta is completely adapted to a ground-level habitat. It grows in amazing little thickets at moderate altitudes underneath the low stunted windblown trees on ridges on both the North and South end of the island. On dry rocks at the South end, I was surprised to find a tough yellowed individual, stunted by six hours a day of direct sunshine. The flowers are not as big or widely opening as its two mainland relatives. This one, too, is susceptible to pig and goat damage. I would suggest since it lacks the pseudobulbs of *D. gracilicaule* to tide it over a severe browsing, it may be at significant risk.

There is another species described from New Zealand and Lord Howe Island which I have not seen. Perhaps it has eluded me because of its diminutive size or restricted range. Perhaps it is not to be found there any more?

The need to protect this tiny spot and its unique blend of South Pacific fauna and flora is acute. The island's system is so delicate that the introduction of the ship rat in 1918 caused the extinction of five species of land birds in five years. The control of introduced animals and plants should be accelerated and maintained. Restraint in the development of the tourist industry is necessary and certainly moderation of vehicle proliferation is required — now at 2 cars per 3 residents — on an island 7 miles long and half a mile wide! As this is the most southerly coral reef in the world, would it not be appropriate and timely to establish a Marine National Park? I don't think these things will happen while control remains in the hands of the Lord Howe Island Board. The impartiality, scientific knowledge and managerial skills of the National Parks & Wildlife Service endow it with the capability to manage this unique place.

June, 1983

c/- ANOS Sydney Group.

Chiloglottis gunnii Lindley, a New Orchid Record for New Zealand

By Brian Molloy and John Johns

The discovery of the Australian "Tongue Orchid", *Cryptostylis subulata* (Labill.) H.G. Reichb., in northern New Zealand in 1975 by the late Digby Graham (Graham 1976) aroused much interest among local orchid enthusiasts and reopened the debate on the origin of New Zealand orchids and trans-Tasman dispersal of orchid seeds (see Rupp and Hatch 1946 for an earlier discussion of these topics).

While orchidologists pondered over these issues another Australian orchid "arrived" in New Zealand, this time in the South Island, adding further spice to the debate. In late November 1981 an unusual *Chiloglottis* was observed in the Hanmer Forest Park, Canterbury, by Grant Bawden of the New Zealand Forest Service. On 12 December it was identified as the "Common Bird Orchid", *Chiloglottis gunnii* Lindley (CHR 286292). An expanding colony of this orchid, spread over about 9 square metres, is now firmly established on the edge of a stand of European larch, *Larix decidua,* planted in 1905 at 400 metres above sea level (Figure 1). The individual plants of *C. gunnii* are rooted in fungus-rich decomposing leaf litter and slash of European larch. Associated orchids include the Green Bird Orchid, *Chiloglottis cornuta* J.D. Hook, which is native to Australia and New Zealand, and the endemic Small Potato Orchid, *Gastrodia minor* Petrie. This is the only colony of *Chiloglottis gunnii* known in the Park and is the first authenticated record of this orchid in New Zealand.

News of the discovery of *C. gunnii* spread quickly, and on 29 December 1981 a much smaller colony was found by a party from the Wellington Botanical Society in the Richmond Range Forest Park, Marlborough, this time under indigenous beech forest (*Nothofagus* spp.) at 1000 metres above sea level (CHR 369800). It is possible that *C. gunnii* may turn up elsewhere in New Zealand in the future.

According to Clements (1982), *C. gunnii* occurs in Tasmania, Victoria, A.C.T., and eastern N.S.W., and throughout its range there are geographic forms differing in flower colour and the position of glands on the labellum (Stoutamire 1975). The Hanmer Forest plants conform to the general description of *C. gunnii* (e.g. Nicholls 1969, p. 49), producing purplish-brown flowers with dark purple glands (Johns & Molloy 1983, Plate 18). The labellum has a sessile gland in the centre and a long-stalked one at the base flanked by one or two small, short-stalked glands either side (Figure 2). These plants resemble that illustrated by Cady and Rotherham (1970, Plate 36).

The Richmond Forest plants have somewhat darker flowers with three or four small glands either side of the tall, erect, basal one. This colony probably represents the separate migration of a different geographic form of *C. gunnii.*

The Hanmer Forest colony of *C. gunnii* is increasing its area by vegetative extension and possibly also by sexual reproduction. On 9 December 1982, when flowering was at its peak, a total of 32 flowers was counted.

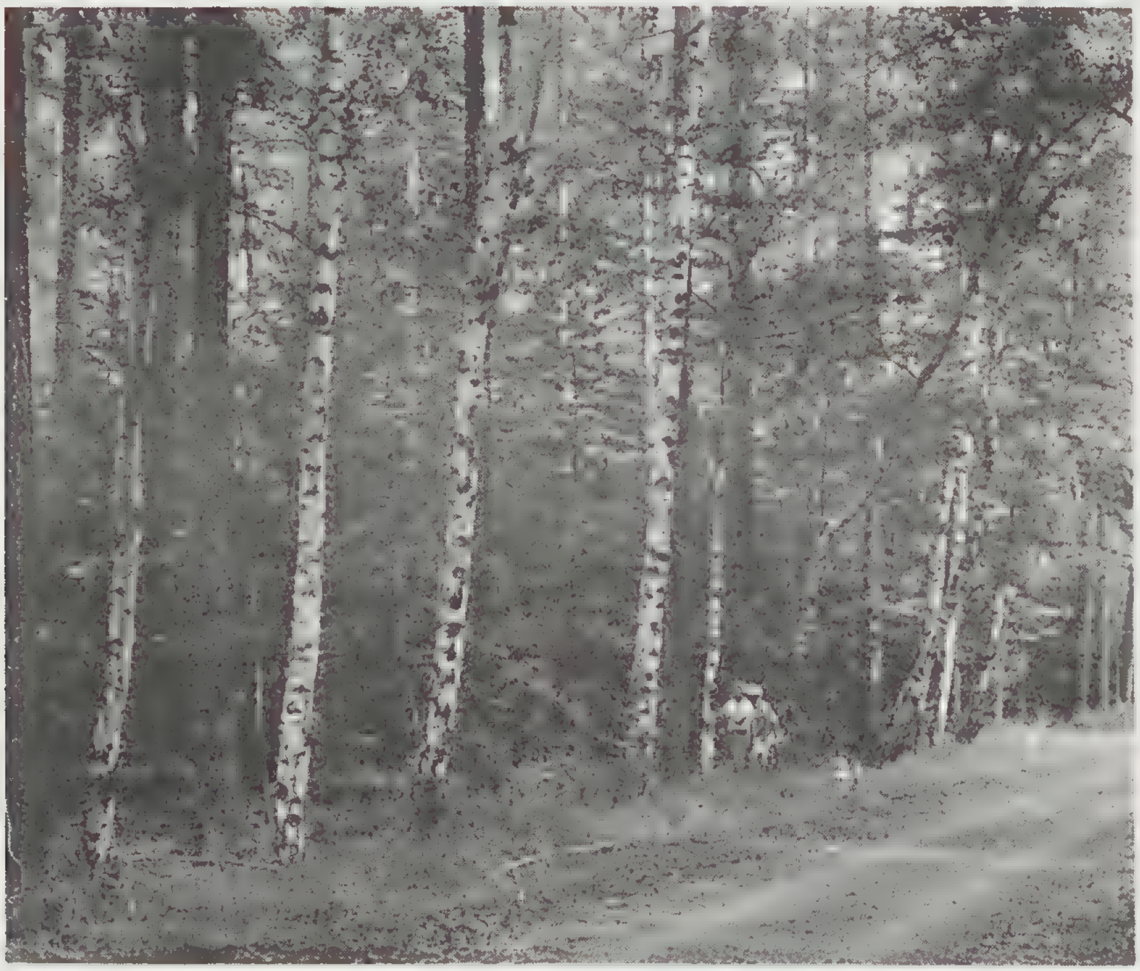

Figure 1. Plantation of European larch (*Larix decidua*), flanked by silver beech (*Betula pendula*), Hanmer Forest Park. First recorded locality of *Chiloglottis gunnii* in New Zealand.

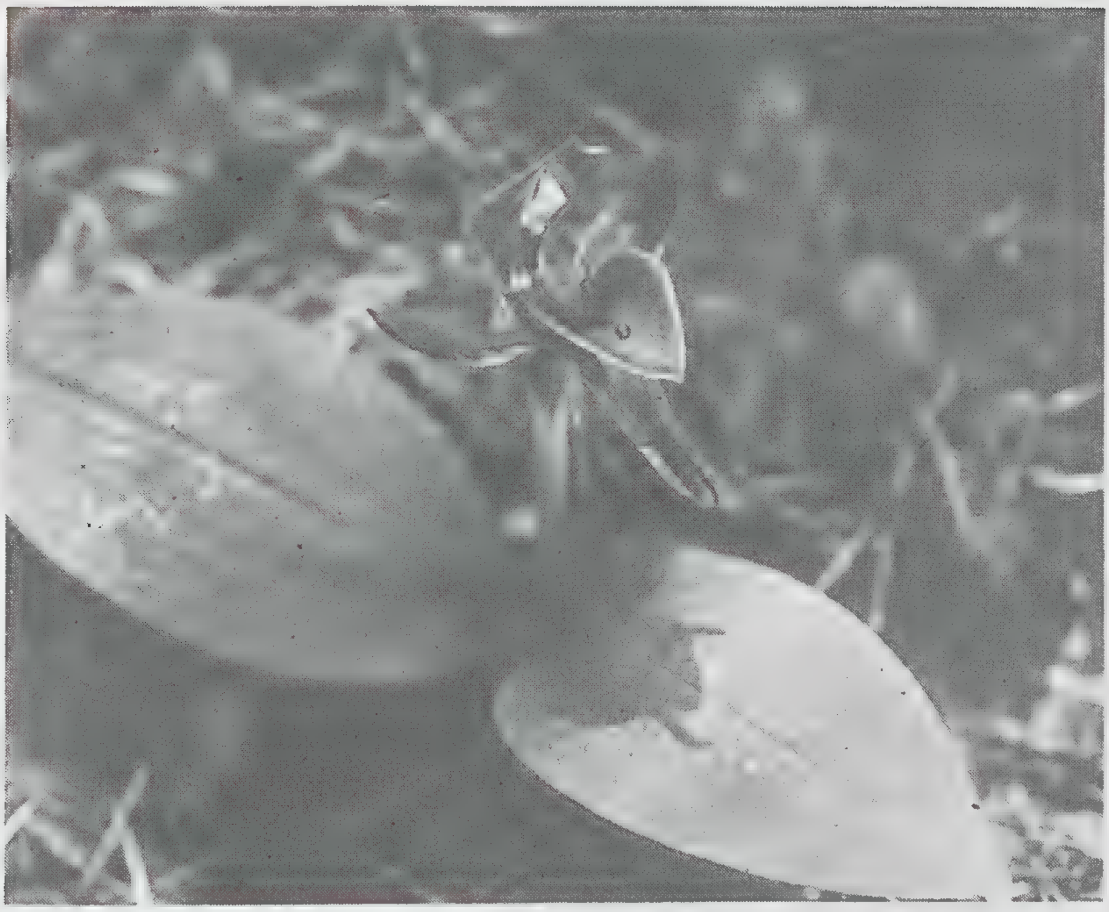

Figure 2. *Chiloglottis gunnii,* Hanmer Forest Park. Note the small, pale-coloured spider on the stigma.

Six of these flowers (18%) subsequently formed filled capsules on elongated stems. An examination of two of these at the early stage of capsule development showed that part of the mealy pollinia had been dislodged and become attached to the edge of the stigma, thereby effecting pollination and fertilisation. In Australia thynnid wasps are the pollinators of *C. gunnii*, and different species pollinate different forms of this orchd (Stoutamire 1975). The Hanmer plants were not observed to attract any insects other than small spiders (Figure 2). We therefore assume that the fragments of pollinia were dislodged either by spiders, or by physical agitation of the flowers, or purely by chance breakage.

Flowering plants of *C. gunnii* from Hanmer that we isolated in an insect-proof cage did not set seed, but good seed set was obtained by handselfing individual flowers (Figure 3). By contrast, plants of *C. cornuta* isolated in the same way formed many filled capsules (Figure 3); in every case self pollination was achieved in this orchid by the ready breakdown of pollinia and the lodgement of fragments on the edge or face of the stigma.

The flower stem of *C. gunnii* is relatively long and articulated at the junction of the floral bract and well below the ovary, presenting the fully-opened flower to potential pollinators (Figure 3). After hand-selfing, the stem assumes an erect position and the flower closes, all within four days. Selfed flowers produce ripe capsules in seven weeks, whereas non-pollinated flowers, and those with the pollinia removed, remain open for the same length of time. The flower stem of *C. cornuta*, on the other hand, is short and erect, and many flowers barely open at all; a habit consistent with self-pollination. Otherwise the response of *C. cornuta* to pollination and the time taken for its capsules to mature is similar to that of C. *gunnii.*

We estimate the Hanmer Forest colony of *C. gunnii* to be at least 10 years old, but it could be even older. The smaller, Richmond Forest colony is possibly younger, resulting from a more recent migration. We believe that both colonies arose from seed carried across the Tasman Sea from southeastern Australia by favourable meteorological conditions. This view supports the ideas advanced earlier by Rupp and Hatch (1946) and the recent evidence summarised by Close and others (1978).

It seems clear to us that New Zealand lies within the natural range of some Australian orchids, and we can now regard *C. gunnii* and *Cryptostylis subulata* as native to New Zealand. Both species are firmly established in at least two localities and are reproducing. (*C. subulata* is apparently pollinated by an ichneumon wasp in New Zealand, as it is in Australia). Neither species seems to have been reported in New Zealand before, and it is unlikely that two such conspicuous orchids would have been overlooked in the past. Possibly they made earlier landfalls but failed to become permanently established. This seems to be the case with other Australian orchids like *Pterostylis nutans* R.Br., *Thelymitra matthewsii* Cheesem., *Chiloglottis formicifera* Fitzg., *Calochilus campestris* R. Br. and Paracaleana minor (R. Br.) Blaxell, all of which are known in New Zealand from very few, mostly early records; Of these, *Paracaleana minor* has been "re-discovered" in New Zealand, also within the last ten years (Ecroyd 1982). The question arises whether New Zealand orchid habitats have

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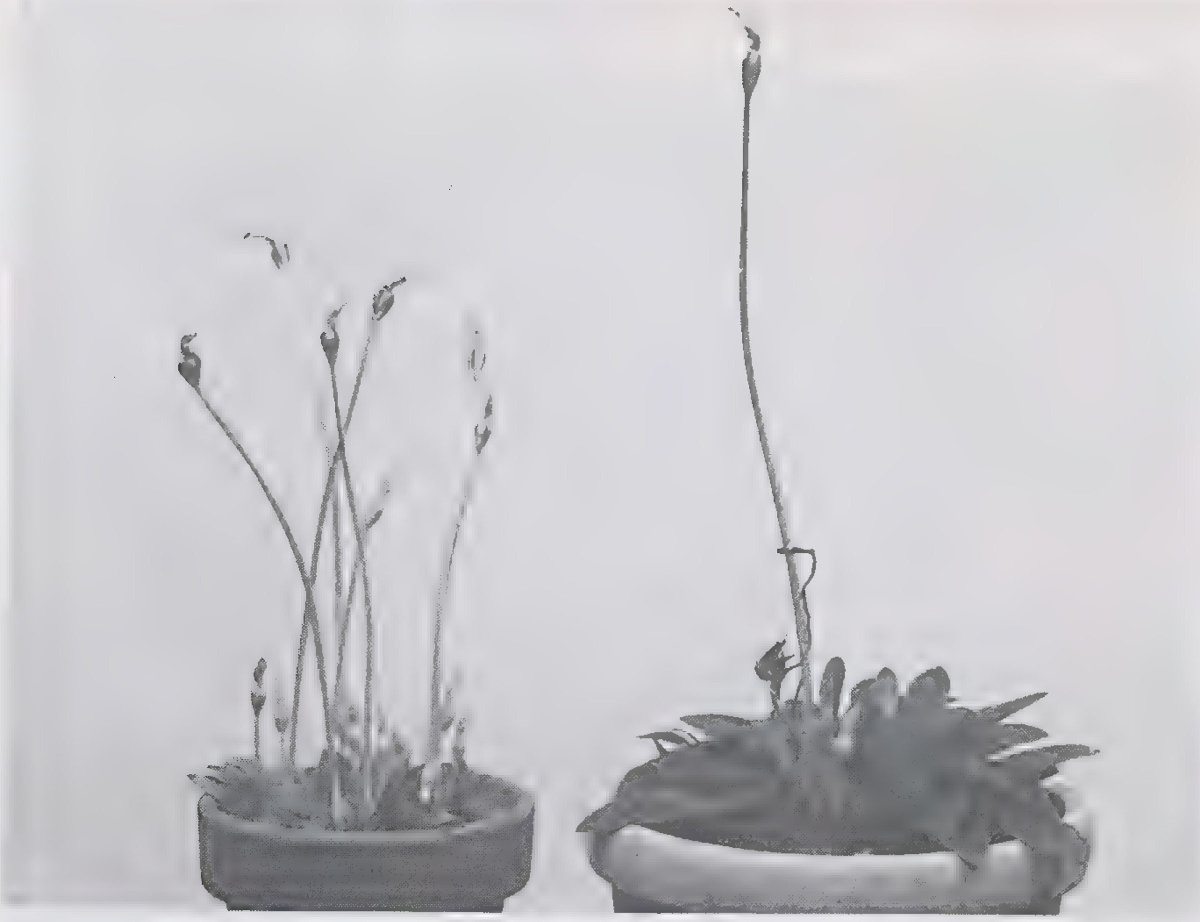

Figure 3. *Chiloglottis cornuta* (left) and *C. gunnii* (right), showing a capsule resulting from hand-selfing of *C. gunnii* (this pot also contains one flowering plant of *C. cornuta*).

Photo: C.J. Miles, DSIR.

become more favourable to trans-Tasman migrants or whether we are witnessing an age-old, periodic phenomenon. Whatever the answer may be, trans-Tasman dispersal of orchid seeds from west to east does occur and cannot be ignored when considering the origin of New Zealand terrestrial orchids.

CONSERVATION ASPECTS

If we accept *Chiloglottis gunnii* and *Cryptostylis subulata* as native to New Zealand, then how do we rate their conservation status? As both orchids are relatively common in Australia it could be argued that we need not accord them a high conservation ranking in New Zealand. However, in our opinion *Chiloglottis gunnii* and *Cryptostylis subulata* should be considered in New Zealand's overall conservation strategy. Fortunately the known colonies of *Chiloglottis gunnii* are already protected within State Forest Parks, but *Cryptostylis subulata* does not have any formal protection. By chance *C. subulata* occurs in extensive wetlands which are the subject of current debate between environmental and developmental lobbies. In addition, at least one colony is being depleted by the removal of plants for private and commercial purposes. Hopefully this orchid will also be afforded a measure of protection in its newly-adopted country.

Acknowledgements: we are grateful to Grant Bawden, Tony Druce, and Geoff Rogers for information used in the preparation of this report, and Peter Williams and Margaret Simpson for useful comments.

References

Cady, L. & E.R. Rotherham (1970) — Australian Native Orchids in Colour. A.H. & A.W. Reed, Sydney.

Clements, M.A. (1982) — Preliminary Checklist of Australian Orchidaceae. National Botanic Gardens, Canberrra.

Close, R.C., N.T. Moar, A.I. Tomlinson & A.D. Lowe (1978) — Aerial Dispersal of Biological Material from Australia to New Zealand. (*Int. Jour. Biometeoro. 22:* 1-19).

Ecroyd, C.E. (1982) — Rare New Zealand Orchids. (*Forest and Bird 14 (223):* 37-38).

Graham, D.K.F. (1976) — An Australian orchid, *Cryptostylis subulata* (Labill.) Reichb.f., in northern New Zealand. (*N.Z. Jour. Botany 14:* 275-277).

Johns, J. & B. Molloy (1983) — Native orchids of New Zealand. A.H. & A.W. Reed, Wellington.

Nicholls, W.H. (1969) — Orchids of Australia. Thomas Nelson Ltd., Melbourne.

Rupp, H.M.R. & E.D. Hatch (1946) — Relation of the orchid flora of Australia to that of New Zealand. (*Proc. Linn. Soc. N.S.W. 70:* 53-62).

Stoutamire, W. (1975) — Pseudocopulation in Australian terrestrial orchids. (*Amer. Orchid Soc. Bull. 44:* 412-415).

August, 1983

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Pterostylis cardiostigma D. Cooper *sp. nov* — A New Species for New Zealand

We have received an offprint from the *New Zealand Journal of Botany 1983, Vol. 21: 97–100,* of a paper by Dorothy Cooper describing and illustrating this new species of *Pterostylis.* In abstract "it is distinguished from other species of the genus by its characteristic heart-shaped stigma, red markings, and upright habit of both the leaves and the flower. Flowering period is from early October to early December". The specific epithet draws attention to the distinctive heart-shaped stigma."

Dorothy Cooper, as founder of the New Zealand Native Orchid Group, edits a periodical Newsletter which we have been following with great interest. In the June 1983 issue of "Newsletter No. 6" Mrs. Cooper published a summary which I quote in full below.— J.J.B.

"This species is distinguished from other species of the genus by its characteristic heart-shaped stigma, red markings, and upright habit of both the leaves and the flower. Plants are 6-35 (40) cm tall, internodes are very short, stem is thickish, the lower portion is covered by pink to red overlapping leaf sheaths with darker red stripes. There are 5-7 sessile leaves, often vey upright, especially in young plants. Leaves are 8-23 cm by 1-2 cm, with a red midrib; they are slightly grooved above and have a prominent keel below. Lateral yellow veins are often prominent.

The flower is tall and narrow, the dorsal sepal is 7cm long, has a red tip, is vertical in the lower half, and in its upper half is steeply inclined or very occasionally more horizontal. Lateral sepals diverge at a very narrow angle and the long red caudae overtop the hood by 2 cm. Petals are slightly shorter than the dorsal sepal, and the tips are red. The labellum is long and trinagular, arched in the upper third. The distal part is red and there is a darker dorsal median ridge. It is grooved beneath. The stigma is heart-shaped and very pominent.

The species has been found in the eastern hills of Wellington, and the southern Tararuas. There is an unconfirmed report of it from the eastern Tararuas. It grows about 30m higher than the *P. banksii* zone in Wellington, and main populations range from 60m above sea level to the ridge crest at 300m. The main flowering period is from early October to late November.

Anyone who thinks they can extend the range of this new species, please contact me. (14 Avalon Crescent, Lower Hutt, New Zealand).

For illustrations, see below."

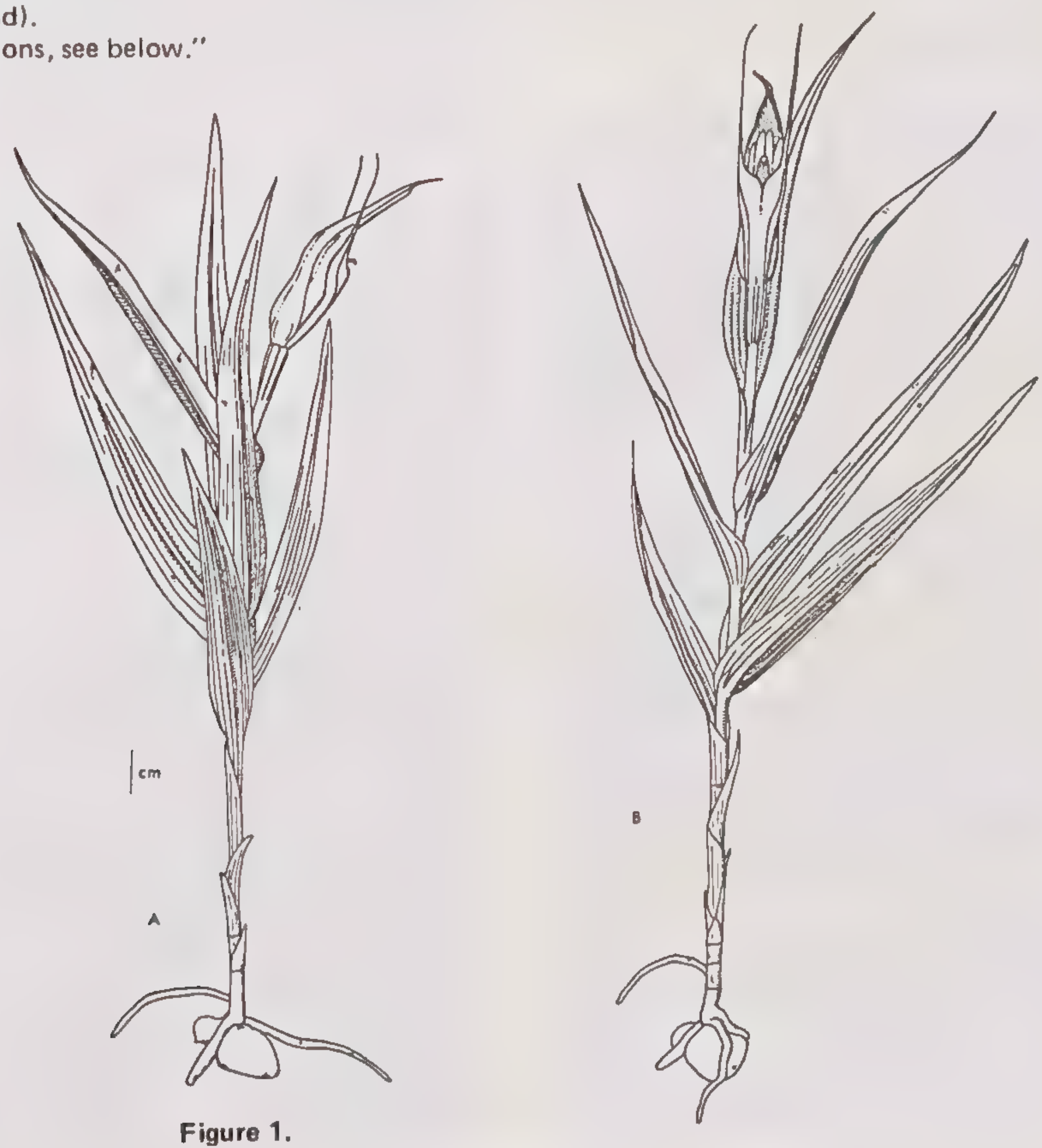


Figure 1.
A, side view of type specimen; B, front view of type specimen.

CULTIVATION BASED ON HABITAT OBSERVATION
VII *Dendrobium tetragonum*

by Michael Harrison

With its square, pendulous stems and spidery flowers, *Dendrobium tetragonum* is one of our most distinctive and attractive orchids. As a horticultural specimen it is widely cultivated and, given a little care and attention, it is a species which will reward the grower with many years of pleasure. It is not a difficult orchid to grow, and its ability to flower repeatedly from the old pseudobulbs for many seasons, enables it to produce a truly striking display on a well grown specimen plant.

D. tetragonum is a variable species with two major varieties recognised, the type variety, *var. tetragonum*, and the larger, tropical variety, *var. giganteum*. A third variety of *D. tetragonum*, originally described from the Illawarra area of N.S.W., is known as *var. hayesianum* but its status must be seriously questioned. This variety is described as having yellowish green segments and a pure white labellum, and has since been reported, as isolated specimens, from several areas north of the original location. But, as the description for this variety was apparently based on only a couple of plants, and the sole distinguishing feature between *var. hayesianum* and *var. tetragonum* is the colour of the floral segments, then it should not be considered as a valid variety. Rather, it must be classed as a colour form of *var. tetragonum*, which, although of horticultural interest, is of no taxonomic significance.

"ALBINOS" AND THE NATURE OF ALBINISM

Confusing this issue, is the occurrence, on Mt Lewis and adjacent highland areas in North Queensland, of a whole race of *D. tetragonum var. giganteum* which exhibit flowers with light green segments and white labella. When plants of this "form" are benched at shows and monthly meetings, they are often identified as *var. hayesianum*, when in fact they are not. What these plants really represent is an established population of a colour form, which for some reason, has evolved differently from other populations of *D. tetragonum var. giganteum*. As opposed to the original *var. hayesianum*, which was based on only one or two plants with "colour-less" flowers, this highland form from North Queensland does represent something more significant, in that all individuals consistently produce flowers which are nearly always completely devoid of any colours other than green and white. We have here, in a sense, a race of albinos, and there is no doubt that these plants evolved in this manner to suit a particular pollinator. Further, it can be reasonably assumed that this pollinator (probably an insect) is itself restricted to highland areas and prefers "white" flowers over "spotted" flowers. The term "albino" is commonly used to describe white or light flowered forms but, strictly speaking, it is incorrect. Albinism is a condition occurring only in animals, and it relates to a partial or complete lack of the pigment, melanin.

Of our native epiphytic orchids, there are several species in which recognised albino and semi-albino forms exist. Of these, *D. kingianum var. album* and *D. kingianum var. silcockii* are probably the best known and most widely cultivated. D. *bibbibum var. album* also comes to mind. None of these really deserve varietal status, for, like *D. tetragonum var. hayesianum*, they generally occur in nature only as individual plants or "sports" within colonies of typically coloured plants. But where persistent colonies of unusual colour forms exist, and not necessarily just albino forms, they are worthy of recognition. The so-called "southern" form of *Sarcochilus hartmannii*, from the ranges around the Hastings Valley, is a good example. The flowers on this form are not the pure, crystalline white which are produced by plants of *S. hartmannii* from the border ranges. Instead, they are a creamy colour, sometimes with a few darker spots around the centre, are slightly smaller in size, and are usually produced a month to six weeks earlier than the typical northern form. There is also a form of *S. falcatus*, usually encountered at higher altitudes (and which, many years ago, was described as *S. falcatus var. montanus*), in which the flowers are larger than average and the side lobes of the labellum are a lemon-yellow in colour, without a hint of the red or purple striping generally a feature of this species. A further distinguishing feature of this form is its perfume, which is unlike other forms of *S. falcatus*, one of which smells dreadful, something like the odour emitted by "stink-bugs". Add to these two examples of distinctive forms, the previously mentioned "Mt. Lewis" form of *D. tetragonum*, and there begins to emerge a picture of orchid species in the process of evolution. Had we arrived on the scene ten thousand years hence, it is quite probable that each of these forms would have, by then, evolved into separate and identifiably intact varieties, or even species. As it is, they are obviously distinct from the mainstream of their kind, and although they may not yet be dissimilar enough to be granted varietal status, they are well on the way.

It is an unfortunate consequence of the interest shown in our native orchids by horticulturalists and hobbyists, that the orchid species, as we know them today, are unlikely to change or evolve further. Exploitation by both professional and amateur collectors has interrupted the genetic integrity of many species, especially the less common and/or horticulturally sought-after, to the point where the long term survival of some is in question. Short of some catastrophe striking the human race (perhaps AIDS is mother nature's secret weapon) I cannot really see a slowdown in the rate of habitat destruction or, indeed, a change in human attitude to the environment. There are occasional victories of note, but for each of these, there are thousands of hectares cleared for housing, pastoral or forestry purposes. Unless checked, this gradual but inexorable consumption of the wild lands will eventually prove too much for many of our native orchids to withstand.

D. tetragonum var. tetragonum is usually described as having a wide distribution, extending from the mid south coast of N.S.W. well into North Queensland. It would seem, however, that there is some question about the occurrence of this variety in North Queensland, and several sources have suggested that small flowered clones of *D. tetragonum var. giganteum* may have been, in the past, wrongly identified as *var. tetragonum*. I believe that further investigation is required to establish the true northern limit of this variety. It is an observable fact that botanical varieties (an inexact and often poorly applied term) do not generally overlap in range, being separated by altitude, latitude or, less commonly, specific habitat requirements (habitat vegetation, rainfall, etc.). The most obvious reason for this is that if the ranges of two varieties of the same species did overlap to any great extent, then the resulting interbreeding would blur the differences between them, they would begin to merge, and one or the other would eventually become dominant to the complete exclusion of the other. This is an over-simplification of a complex issue, and I have made no mention of the roles pollinators play, nor of the significance of variation in flowering times. I suppose it would be possible for two varieties to co-exist if they flowered at different times of the year or relied on different pollinators, but I find it difficult to imagine how such a situation could initially come about. One assumes an ancestral species, either now extinct, similar to, or even identical with one of the presently existing varieties which, in one part of its range, modifies itself to suit a particular pollinator. But for a distinct variety to emerge, it would be necessary for all individuals within that range to move in the same direction as a cohesive whole. It would be, I believe, impossible for some individuals to remain unchanged and for others to evolve differently in the same place and at the same time.

On average, *D. tetragonum var. tetragonum* produces flowers about six centimetres tall, on short, pendulous racemes, in groups of two to five. These are typically a light green or creamy yellow in colour, with the margins of the sepals edged in dark brown or red. The labellum is generally a creamy colour, variously marked with purple or red stripes, and the midlobe is sharply turned down, usually curling under itself. The pendulous pseudobulbs may attain a length of sixty or seventy centimetres, although thirty to forty centimetres is average, and the dark green leaves, with undulate margins, are produced at the ends of the pseudobulbs. The flowers on *D. tetragonum var. tetragonum* vary considerably in both size and colour throughout its range. Some forms are entirely bronze in colour, with no darker segmental markings whatsoever, apart from the labellum, whilst in others, the dark margins on the sepals are patchy or blotched. Occasionally, the sepals are almost completely red in colour. Flowers range in size from four centimetres up to ten centimetres. The number of flowers per raceme is also very variable, and some clones produce up to ten.

D. tetragonum var tetragonum is usually encountered near the coast and on the coastal ranges, where it grows on trees in sheltered gullies and ravines, usually where there is permanent water. In the rugged sandstone country in the southern part of its range, one is often taken unawares by the beauty of these secluded, secret places. From the top of a dry rocky ridge, the creek one hundred and fifty metres below looks hardly worth the trouble it takes to climb down; and the thought of climbing out again is usually enough to dissuade most people from attempting the descent. But once the effort has been made, one enters a lush wonderworld of cool green and dappled sunlight through the branches. *D. tetragonum* may be seen on a variety of host trees. It is not uncommon for this orchid to occur prolifically in these situations, and at times whole trees may be festooned with hundreds of plants, their fine roots forming an interconnected network extending for metres and often completely enveloping host limbs. At times, however, *D. tretragonum* may also be seen well away from watercourses, growing on trees in typical "dry scrub" rainforest. I remember seeing a colony, in one of the state forests near Wauchope, growing beautifully on *Trochocarpa laurina,* in association with such other orchids as *D. gracilicaule, Sarcochilus falcatus, S. hillii* and *Rhinerrhiza divitiflora,* and within only a few metres of an exposed rock face where *D. kingianum* was prolific. *D. tetragonum* also commonly occurs on *Melaleuca* species (I am familiar with it on *M. linarifolia)* in poorly drained coastal situations. In some areas these swampy paperbark forests support sizeable colonies of *D. tetragonum* and, often, *D. linguiforme* is also common. *D. tetragonum var. tetragonum* is a spring flowering species, producing only one flush of flowers each year, usually in September.

D. tetragonum var. giganteum occurs in north Queensland, extending from the Fitzroy River to at least as far north as Iron Range on the eastern seaboard of Cape York Peninsula. Whereas *D. tetragonum var. tetragonum* is seldom encountered at altitudes above about four hundred metres, *D. tetragonum var. giganteum* may occur at any altitude from sea level to the tops of the ranges. It invariably grows on rainforest trees and, like *var. tetragonum*, it may be locally common in some areas. *D. tetragonum var. giganteum* is usually larger in all its parts than *var. tetragonum,* producing longer pseudobulbs, larger leaves, which are generally a lighter shade of green, and, of course, larger flowers. It is not uncommon for the flowers on this variety to measure fifteen centimetres from top to bottom, and although many clones do exhibit flowers which are considerably smaller than this, the fact remains that, on average, *D. tetragonum var. giganteum* produces larger flowers than *D. tetragonum var. tetragonum.* A distinctive feature of *D. tetragonum var. giganteum* is its ability to flower several times each year, and at least one of my plants annually produces two full-scale flowerings; in late winter and again in late spring. Odd flowers may also appear at other times of the year. This variety is also less regular in its pattern of growth, and new pseudobulbs may be produced at almost any time, although its main growing period coincides with the wet season in the tropics; usually December to April or May.

There is probably not as wide a gulf between the two varieties of D. *tetragonum* as initial impressions suggest, for while the large spotted or blotched flowers on *D. tetragonum var. giganteum* appear to be spectacularly distinct from those on *var. tetragonum,* a closer examination reveals few morphological differences. The most consistent difference between the two is in the labellum. On *var. giganteum* the labellum is usually wider (the sidelobes are flared outwards) and longer (the midlobe is not sharply turned under, but curves gently downwards), making it more prominent in relation to the rest of the flower than is so in *D. tetragonum var.*

tetragonum. Botanical references also state that the midlobe of the labellum on *var. giganteum* is covered with fine hairs, although in some cases a hand lens is necessary to see these.

CULTIVATION

Cultivation of *D. tetragonum* presents no particular difficulty and both varieties can be grown together under identical conditions. I have several clones of *var. giganteum*, of which I have no knowledge of altitudinal origin, but they grow well, alongside plants of *var. tetragonum,* in an unheated fibreglass orchid house. This consists of weldmesh panels clipped together to form a seven by three metre, gable-roofed structure, running east/west, the whole of which is clad in eight gauge corrugated fibreglass, except for the eastern end, which is open to the elements. There is also a permanently open ridge vent running the entire length of the house. The fibreglass has an intrinsic shade factor of 30% and over the roof, supported by a chicken wire frame, is a layer of 50% shadecloth. Night time temperatures during winter occasionally drop to zero, and I have recorded summer time maximums of up to 44°C. These extremes of weather do not appear to have any effect on *D. tetragonum*, for as long as adequate shade, humidity and ventilation are provided in summer, and plants are not exposed to frost in winter, then problems seldom arise. *D. tetragonum* enjoys reasonably high levels of humidity, occurring, as it usually does, in cool protected gullies, in paperbark swamps and in rainforest. These areas also usually afford their inhabitants quite heavy shade, and *D. tetragonum* commonly situates itself in positions where it receives no direct sunlight at all. However, where it grows in paperbark swamps, the overhead canopy is considerably more sparse and plants are exposed to stronger light. At most times of the year the forest floor is quite boggy, if not completely under water, and the constantly very high humidity sustains colonies of *D. tetragonum*, allowing them to thrive under light conditions which would otherwise prove excessive. This demonstrates the relationship between light, temperature and humidity with regard to orchid culture. An orchid plant is capable of withstanding higher than normal levels of light if the temperature is relatively low or if the humidity is relatively high, or, ideally, both. Likewise, if a reverse situation exists, and the temperature is high and the humidity low, then the plant will suffer dehydration and burning unless increased shade is made available. Orchid growers have used this principle to their advantage, for in many species higher levels of light in cultivation result in better flowering, and if a grower can safely increase the light his plants are receiving, by keeping the temperature in the orchid house down and the humidity up, then his chances of success on the showbench are enhanced. There are, of course, limits to this exercise, and no amount of shading will protect plants from temperatures approaching 50°C, especially if the humidity is correspondingly low. There are also limits to the amount of light different species will tolerate, regardless of temperature and humidity, and, as with all cultural advice, a grower's best course is to experiment, a little at a time, with his own plants.

Although plants of *D. tetragonum* in the bush are quite capable of withstanding extended periods of dry weather without any ill-effects, they seem to resent the same treatment in cultivation. If allowed to dry out completely for too long or too often, they will not perform well, and a typical symptom of this problem is the production of shorter than average pseudobulbs, such as are normally produced during the first year or two in cultivation, until a plant has established itself properly. For this reason I prefer a somewhat moisture retentive medium for this species. Paperbark poles are very successful and treefern slabs or blocks are also excellent (my favourite, I think). Cork is good, as is weathered hardwood, but both require watering more often because they dry out quickly. I am currently experimenting with ironbark totems and I also expect good results from these. They consist of the bark of ironbark gum species, sawn in lengths of about one metre and are usually about ten centimetres wide. A couple of years ago I bought a few to see how they would go, and the results to date have been pleasing. Just about everything grows well on them, they are long lasting and, importantly, they are cheap and readily obtainable. In fact, I believe they will make an excellent substitute for cork.

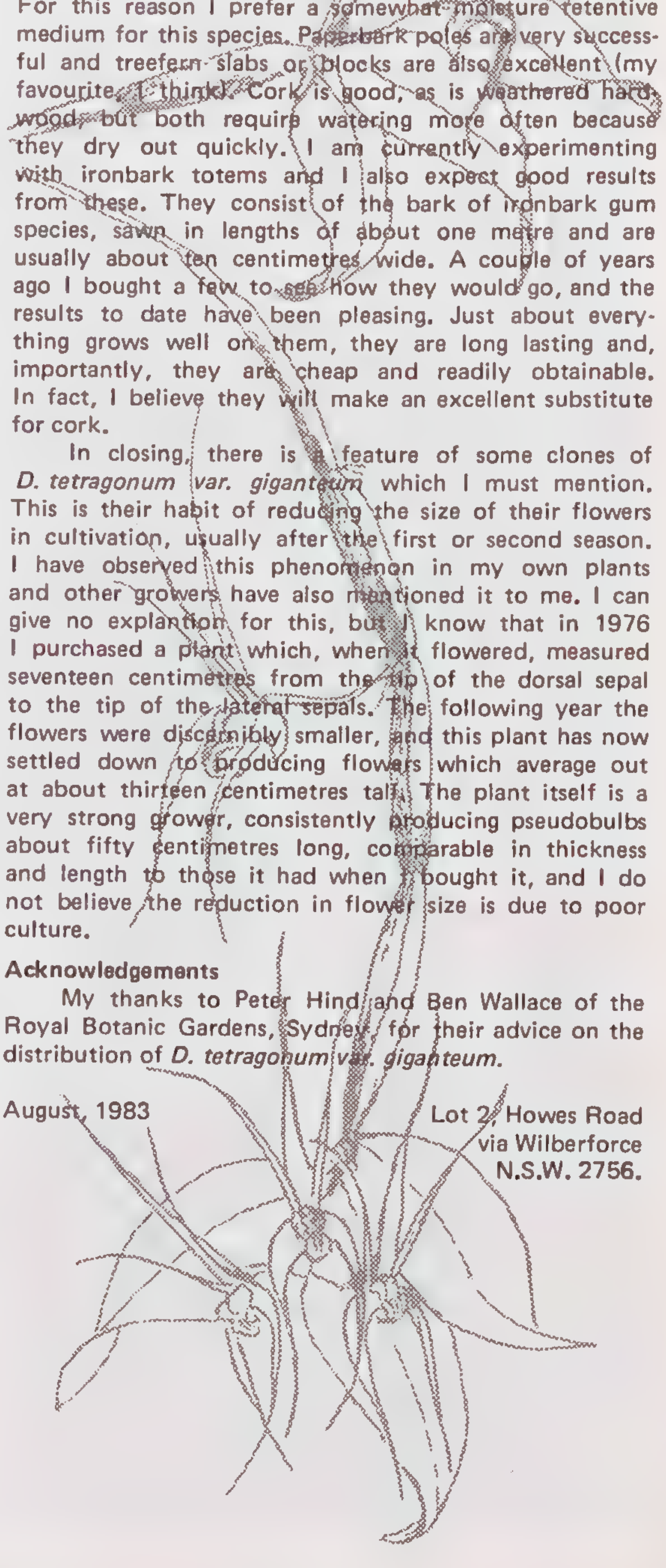
In closing, there is a feature of some clones of *D. tetragonum var. giganteum* which I must mention. This is their habit of reducing the size of their flowers in cultivation, usually after the first or second season. I have observed this phenomenon in my own plants and other growers have also mentioned it to me. I can give no explanation for this, but I know that in 1976 I purchased a plant which, when it flowered, measured seventeen centimetres from the tip of the dorsal sepal to the tip of the lateral sepals. The following year the flowers were discernibly smaller, and this plant has now settled down to producing flowers which average out at about thirteen centimetres tall. The plant itself is a very strong grower, consistently producing pseudobulbs about fifty centimetres long, comparable in thickness and length to those it had when I bought it, and I do not believe the reduction in flower size is due to poor culture.

Acknowledgements

My thanks to Peter Hind and Ben Wallace of the Royal Botanic Gardens, Sydney, for their advice on the distribution of *D. tetragonum var. giganteum.*

August, 1983

Lot 2, Howes Road
via Wilberforce
N.S.W. 2756.



CONSERVATION

An article originally published in **The Orchipophile** *(Sydney ANOS Group Bulletin) January 1983 and republished here by kind permission of the author.*

SOME LOGIC AT LAST

by Gerry Walsh

A large majority of the citizens of New South Wales must surely be right behind the bold decision taken by the Government to ban the logging of this State's rainforests. If the necessary legislation is passed quickly, and logging is phased out over a reasonable span of time, then the future would be assured for those areas of rainforest that still remain. And this should put a smile on the face of native orchid lovers. But a logging ban for the sake of native orchids is only a small piece of a much larger jigsaw, and as with any complex issue, there are two or more viewpoints to be considered.

The section of the community in favour of the continuation of rainforest logging puts forward quite a plausible case in support of their stand. This argument is a financial one. It is all too easy for city dwellers to sit back in their armchairs and simply say that the rainforests should be left alone. But if our employment prospects were threatened — and consequently the wellbeing of our families and our own security in old age — we would surely be sympathetic to the logging industry. The financial temptation is indeed hard to suppress. Unfortunately, the financial gain seems to be the only good thing to emerge from rainforest logging.

It has been reported, apparently by well informed persons, that at the current rate of harvest, the rainforests would suffer severe and irreversible damage in around 20 years from now. Predictably, the pro-loggers dispute these claims. They say the harvest is diminishing yearly, and that natural regeneration will be able to meet the expected demand . . . eventually. I believe it is too late to be sorry. Sound management should have been introduced when there was still something to manage.

Regeneration is simply inadequate. The softwoods will eventually reestablish themselves and slowly push back the initial charge of blackberry, lantana, crofton weed, and a host of other 'mongrels'. But what do the brush turkeys, the wonga pigeons, the pademelons and the native carniverous snails all do while their environment is being rebuilt? And what do the native orchids do? Needless to say, they will probably die out, or drop to hopelessly unstable levels. If they all migrate to a neighbouring rainforest (probably only a gully) they will damage the fragile balance by over-populating the area. This creates territorial and food imbalances, and so the breeding cycle declines. The fauna becomes susceptible to communal diseases which can wipe out the whole colony. Over-population attracts unnatural numbers of predators such as the Eastern Native Cat, the Tiger Cat and the feral cats, and to a lesser extent, dingoes and foxes. These predators increase in numbers because of the short term increase in their food supply. And so it goes . . . predators increase and their prey decrease. Eventually they both succumb. The confinement of the remaining rainforest just cannot provide enough hiding places to allow uninterrupted breeding. The final result can be extinction in the region. This is not fantasy. There are no longer any brush turkeys in the Illawarra district. Sixty years ago they were reasonably common. Sixty years ago the big areas of rainforest were finally cut out. Shotguns undoubtedly accounted for some, but destruction of habitat would have to be the major factor.

After the buldozers leave, the trees will eventually return. The new rainforest will once again display a lush green facia. But the heart and soul will not return. The fauna will not be available to repopulate by breeding. The majority of filmy ferns and mosses will have disappeared. And with them, the fungi and bacteria that are so necessary for the orchid seeds to germinate in and around. But the loggers will be happy. They will have a whole new supply of rainforest timber to line their pockets with.

Several aspects of rainforest logging worry me, apart from the obvious environmental damage. Nearly all the rainforest timber cut in N.S.W. goes to the plywood and veneer factories. What a waste of scarce and valuable resource! A small percentage does go to the furniture industry of course. But if you go into the average Sydney timber yard and ask for a piece of Coachwood, or Rosewood, or any other species for that matter, you will get nothing but blank stares from nearly all of them. The loggers will tell you that rainforest softwood is the only suitable timber from which to make veneer and plywood. But what does the rest of the world do for these products? There are no rainforests in Europe or most of North America, for example. And countries in these continents do not import such products in any more than token quantities from Australia.

They do one of two things. They import supplies from Central and South America, Central Africa and South East Asia, where there is a generous supply of rainforests, and where there is no chance of over-cutting. Or they utilise their indigenous trees — *pinus* species for instance. Australian sawmillers say our hardwoods are not suitable for plywood and veneer. The more tangible explanation is that too much money would need to be parted with to convert mills to accommodate the hardwoods. But there is one large mill in Lismore that has experimented with hardwoods, with satisfactory results. Hardwood species must be used eventually. We simply do not have enough rainforest to use it for making cheap furniture and the like.

The other thing that worries me is this 'regeneration' that the loggers keep regurgitating. Surely they have a responsibility to do more than just move on when a region is logged and proclaim that regeneration will clean up the mess. They should surely be establishing plantations of rainforest trees for the use of future generations if, as they claim, it is a necessary commodity. There are many areas of N.S.W. suitable for such

There is no single solution to the rainforest debate. And, as the loggers are now discovering, no alternatives other than plantations or the use of hardwoods, or the extinction of their industry (along with the brush turkey and native orchids). We owe it to future generations of Australians to preserve our rainforests today, so that they may enjoy them tomorrow. Not just in fifty years time but in two hundred or more years from now. And if sanity prevails there could still be a Sydney group of ANOS around at that time also. They may be able to enjoy field days then as we do now. And if they cannot see orchids and rainforests we will have a lot of explaining to do outside the pearly gates — or the other place.

plantations. Although rainforest species demand damp and humid conditions for successful seed germination, young trees will grow well when planted in suitable soils away from the rainforest environment. It seems logical that the establishment of a few nurseries to germinate seed, and the subsequent replanting of young trees in suitable areas such as old dairy farms and cleared brush country, would do a lot to convince the general public that the timber industry is genuinely concerned for Australia's heritage. But the big dollar sign rears its ugly head over all things. The forty or fifty years it would take to establish such plantations makes it financially unattractive to a Company whose board members will be dead and buried before returns would be forthcoming.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the R.H.S. November 1982 – January 1983 – listed in the Orchid Review, *June and July 1983)*

NAME	PARENTAGE	REGISTERED BY
DENDROBIUM		
Aussie Angel	Aussie Ira x *bigibbum*	Phil Spence Orch.
Aussie Cascade	*pugioniforme*† x *beckleri*	Phil Spence Orch.
Aussie Freckles	Suffusum x *falcorustrum*	Phil Spence Orch.
Aussie Mist	Peter x Bardo Rose	Phil Spence Orch.
Aussie Ochre	*agrostophyllum* x *speciosum*	Phil Spence Orch.
Aussie Starlight	Aussie Ira x *speciosum*	Phil Spence Orch.
Aussie Sunshine	Peter x Eureka	Phil Spence Orch.
Harold Hirsch	Suffusum x *speciosum*	W.T. Upton
Jombock	Judy Leroy x Colin	W.T. Upton
Nunkumbil	*tetragonum* x Eureka	W.T. Upton
Rosella	*tetragonum* x Peewee	W.G. & J. Cannons
Warrambool	Ellen x *falcorostrum*	W.T. Upton

†This symbol indicates the first occurrence as a parent in hybrid registration of *Dendrobium pugioniforme.* Section 2 of the ANOS "Checklist of Aust. Native Orchid Hybrids" lists a naturally occurring hybrid (*pugioniforme x beckleri)* as reported by "Ford in *The Orchadian* Vol. 3, No. 7, p.88, and by Spence (unpublished). Isolated specimens".

Editorial Note: We seem to have, in the above list, a plethora of "Aussies".

Let us hope that D. Aussie Ochre does not become "Aussie Ocker" as a fitting comment on this trend. Personally I have been looking forward to seeing a cross between *D. agrostophyllum* & *D. speciosum* for some time but we can only guess about its flower quality and shape before seeing it in the flesh or on the bench. As a primary hybrid it could well open up a new line — perhaps broadening the petals and sepals of *D. speciosum*? If so it could bring a great change from the look-alike starry progeny of the various *D. tetragonum* hybrids. I believe this would not be an easy cross to make and Phil Spence deserves credit for the achievement. We shall be looking forward to a photograph in *The Orchadian* in due course.

—J.J.B.

THE NATIVE ORCHID SOCIETY OF QUEENSLAND

At the recent Annual General Meeting of the Society the President, Mr Nev. Bone and the Secretary, June Crane, were both returned to office. We are looking forward to the year ahead.

There has been a greater awareness of our terrestrial orchids among members with more plants tabled each month. Two of our keenest growers are John Roberts and Ralph Crane. Members are co-operating in a scheme to propagate by flasking seed of a number of harder-to-find species. This seems to be the only way to ensure that the species will still be around many years from now. As collecting or even the getting of permits to collect is now almost prohibitive. We are looking forward to staging displays at the Q.O.S. Show, the Species Orchid Show, and the S.G.A.P. Show in September and October. It is a challenge to promote our Society and display our many beautiful, though mostly small, orchids to the general public.

—June Crane,
Hon. Secretary

8th August, 1983

THE GARDENING EVENT OF THE YEAR

From the 23rd to the 29th of September, the Royal Botanic Gardens will be celebrating "Gardens Week". Highlights will include a Botanical Illustrations Exhibition, an Orchid Show, orchid displays, guided walks, a Plant Identification Forum, and a series of seminars and demonstrations by Gardens Staff and well-known identities in the horticultural field. It is also expected that the NSW Association of Nurserymen and its members will be co-operating with the display.

The above is reprinted from the latest Newsletter of the "Friends of the Royal Botanic Gardens Sydney". Apart from the many obvious advantages of joining this society (for $20 p.a. ordinary membership) present members have been invited to a preview of the Botanical Illustraitons Exhibition which includes paintings, hand-coloured lithographs, prints and sketches. Botanical artists represented will be Sydney Parkinson, the botanical illustrator accompanying Captain James Cook on his travels, Ferdinand Bauer who accompanied Matthew Flinders on his voyages around Australia; the 19th Century illustrator R.D. Fitzgerald, famous for his orchid drawings, Margaret Flockton, botanical illustrator for J.H. Maiden (Director of the Gardens from 1896 to 1924) and Margaret Stones, an Australian currently working at Kew Gardens, whose work has been recognised throughout the world.

Friends are invited to view the collection from 8.00 p.m. Limited purchases of selected prints of a few of the early artists mentioned above may be made. Those items for sale will be clearly shown.

The collection will be open to the public in Gardens week, when it will be officially opened by Miss Margaret Stones.

ANOS will, of course, display native orchids during "Gardens Week".

READERS' SERVICE ADVERTISEMENTS

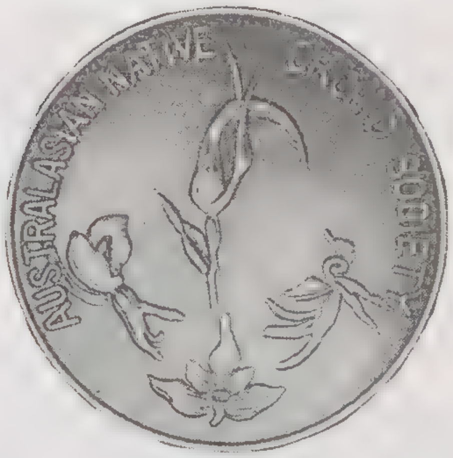
($5.00 per advert.)

WANTED TO BUY — a copy of Dockrill's *Australian Indigenous Orchids.* Please write to James McQueen, P.O. Nabowla, Tasmania, 7254.

BOOKS WANTED All types Botany, Zoology, Archaeology, any Australiana, New Guinea, Asia, Pacific. Telephone Len Lawler 692 2235 or 848 9150 (after hours). Dept. of Biochemistry, University of Sydney 2006).

ANOS Medallions

How to avoid the hassles about what to award your show champions?



(ANOS medallion actual size)

Add prestige to your Show with the ANOS medallions. In cast metal and finished in silver or bronze, they are the perfect choice for your Native Orchid Grand Champion and Runner-up.

The medallions depict four Native Orchids on the obverse: *Pterostylis revoluta* (for the eastern States), *Caleana major* (all states except W.A. and N.T.), *Dendrobium cyanocentrum* (P.N.G.) and *Caladenia cairnsiana* (W.A.).

The reverse side is blank to allow you to engrave details of your particular award winner.

As is proper for such a medallion, each one is presented in an attractive gold embossed clear-top display case and resting upon a royal blue velvet pad. Your winners will be proud to display it.

Available at $10.00 each. Add $1.00 for postage within Australia, for mailing overseas add $A1.50).

Order from: The Secretary, ANOS, Box C106, P.O. Clarence Street, Sydney, 2000.

ORCHIDS ON STAMPS

Barry Collins, Vice-President of the OS NSW has written (22 July, 1983) to all affiliated societies as follows:

"I am in the process of forming a club for collectors of "Orchids on Stamps".

Like orchids, stamp collecting is a hobby shared by many people throughout the world. Many countries have issued stamps with either their own native orchids or copies of world famous orchids. The total number of stamps issued so far is about 1100.

I know of many fine thematic collections of orchid stamps and numerous members of the Orchid Fraternity have, in the past, requested me to supply them with missing issues. With this in mind and the interest shown, I think now is the appropriate time to form some sort of affiliation or club pertaining to this hobby.

Would you please ascertain from your Members if there is sufficient interest to join some sort of affiliation, the details of which will be worked out when we see the interest created.

Please supply me with the names and addresses of any of your interested members as soon as possible so that we can start the proceedings.

I don't want to know what or how many stamps they have, we can talk about that later.

Finally, I am very hard to contact by telephone so would you please send your returns to Barry Collins, PO Box 131, St. Paul's, NSW 2031."

TAXONOMIC NOTE

TWO NEW GENERA AND A NEW SPECIES FOR NEW CALEDONIA

David McAlpine has kindly drawn our attention to a paper by Nicolas Hallé published in 1981 ("Orchidées de la Nouvelle-Caledonie: addition 2") in Bull. Mus. natn. Hist. nat. Paris, 4 ser., 3, 1981, section *B. Adansonia* No. 4: 407-413.

In summary: the genera *Micropera* and *Saccolabium* are new for New Caledonia. Two species are illustrated of which one is the new *Saccolabium serrulatum* N. Hallé. At present, the orchids of New Caledonia are therefore reckoned up to 196 species.

The other species illustrated by Hallé is *Micropera fasciculata* (Lindley) Garay (1972) which is included in Clements's "Preliminary Checklist of Australian Orchidaceae" (p. 128). This was originally described in 1843, by Lindley, as *Saccolabium fasciculatum.* Its synonyms (possibly more familiar to Australian readers) are *Cleisostoma keffordii* Bailey (1884), *Saccolabium coplandii* Bailey (1907), *Sarcanthus papuanus* J.J. Smith (1910) and *Camarotis keffordii* (Bailey) J.J. Smith (1913).

Dockrill (Aust. Indig. Orch 1969) at pp 757-759 describes and illustrates this orchid as *Camarotis keffordii,* stating that its exact range is uncertain but that it does occur at least in the area between the Tully and the Bloomfield Rivers — growing on rain forest trees, usually at low altitudes, and flowering March to May. A large plant with erect woody stems to 4' long (120 cm) it carries erect racemes to 10" (25 cm) bearing 8 - 10 cream-coloured flowers. According to Dockrill the genus Camarotis extends from Indo-Malaysia through Indonesia and New Guinea to Australia.

The word "FitzGerald" in the French text caused me to translate Halle's comment; "The floral analysis, though previously figured by FitzGerald and by J.J. Smith deserved to be reviewed and completed in taking account of the variation of certain accessory characteristics."

Turning to FitzGerald's "Australian Orchids", Vol. 2 Part 2, (1885) I found *Cleisostoma keffordii* beautifully drawn and coloured and the following comment: "This plant, as Mr Bailey has observed, 'has the habits of a Vanda' and it appears to be an intermediate form between that genus and *Cleisostoma* or *Sarcochilus,* its flowers being hardly those of a *Cleisostoma."*

J.J. BETTS.

INDEX TO VOLUMES 1–5 OF *THE ORCHADIAN*

Mr. John Womersley of Adelaide has completed the onerous task of compiling a consolidated index to the first five volumes of *The Orchadian.* It covers fifteen years (1963—1978) in two parts. Part I lists authors, all papers, articles and notes. Part II includes all validly published scientific names of orchids dealt with. Distinctive typefaces will be used for convenient reference to page numbers for illustrations.

In every way a very professional job has been done by Mr Womersley and ANOS is indeed grateful to him for this much-needed voluntary work. For readers possessing a complete set of *The Orchadian* from its inception, the Index is essential. Without it our fifteen years of valuable papers on Australian native orchidology will remain largely inaccessible.

ANOS has supplied free to its members an Index to Volume 6 and will do likewise for Volume 7 on its completion in 1984. However the large amount of typesetting and printing for the consolidated index to vols 1—5 will be such that the cost to the Society will be prohibitive unless we can be assured of sufficient orders at $5.00 (Australian) per copy before the printing schedule is commenced. Our present plan is to publish the Index early in 1984 but funds are not readily available at this stage.

Readers are therefore asked to place orders with the Secretary, ANOS without delay and to make advance payment with the order. Librarians of institutions, societies and Groups of ANOS who receive free or exchange issues of *The Orchadian* should note that the Index to Vol's 1—5 will not be issued free. The payment of $5.00 (Aust.) will cover increased postage charges within Australia.

LETTER to the Editor (& Gerry Walsh)

Dear Sir,

In *The Orchadian*, Vol. 7, number 8, page 193 (June 1983), Gerry Walsh wrote about "The Way I See It". I want to say that when Mr Walsh states that *D. falcorostrum* only grows on Antarctic Beech he has not done his homework properly. I know where they are growing on big round rocks in their natural state, and on coachwood trees.

Now this is the way I see it: your statements are very true about the government but you have spent a lot of time sneaking around the North Coast finding out other people's business. The people who collect orchids for their hobby are a big joke. They only join the Society for their own wealth and the greatest offenders are from the big cities. On their north coast holidays they go out into the forests and steal them. I, myself, preserve them.

The plants in my collection are worth many thousands of dollars and all donations (in my charity tin) go to the charity I work for. When I sell a plant and take my expenses out the rest goes to charity.

You should have put your statements in the newspaper for everyone to read. Better still, why didn't you send a copy to National Parks & Wildlife? Two years ago two ANOS members from Sydney called at my place, purchased a couple of orchids, put some money in my charity tin and stated they would get me a write-up in the ANOS; but that didn't come, but when the Orchid Review came out my "Know-how" was in it but no name was signed under it, or any other names mentioned.

"This is the way I see it". If you can't mention the person's names, stop the mud-slinging because I know the persons you are stomach-paining about.

Furthermore don't send me this sort of garbage book again, it's not worth reading.

Yours faithfully,

P. King,
1 Korff Street, Coffs Harbour, N.S.W. 2450

29 July 1983

Editorial note: *We are grateful for Mr King's quick response to Gerry Walsh's views but regret we cannot guarantee not to send him more "garbage" in future. We suspect that Gerry Walsh's reply could well be: "Methinks he doth protest too much!"—Ed.*

Who's Who

A Directory to the Australasian Native Society —Its Officers and Group Contacts

ANOS Executive Council (Address as shown on Editorial page)

President: N. Hilliger; **Vice President:** P. Leithhead; **Secretary:** M. Harrison; **Treasurer:** Margaret Spence; **Editor:** J. Betts **Councillors:** R. Gifford, Sue Herd, G. Hillman, L. Jarvis, M. Penberthy.

ANOS Groups and Affiliated Native Orchid Societies.

NEW SOUTH WALES

- **Port Hacking Group:** Tel. (02) 524 9996 c/- Sec. 12 Laguna St. Caringbah 2229. Meets 8 p.m. 4th Tuesday at Community Hall, Gymea Bay Road, Gymea.
- **Sydney Group.** Tel. (02) 53 5956 c/- Sec. Lot 2, Howes Road, via Wilberforce 2756. Meets 8 p.m. 3rd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- **Warringah Group.** Tel. (02) 99 2468 c/- Sec. P.O. Box 524, Dee Why, 2099.
Meets 8 p.m. 2nd Thursday at the Thomas Vickers Memorial Hall, Cnr Pitt and Grainger Roads, North Curl Curl.
- **Wollongong and District Group.** Tel. (042) 71 5350 c/- Sec. 19 London Street, Berkeley 2506.
Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- **Central Coast Group.** Tel. (043) 88 1785 c/- Sec. 158 Geoffrey Rd., Chittaway Point, 2259. Meets 8 p.m. 2nd Wednesday at the Baptist Church Hall, cnr York and Frederick Streets, East Gosford.
- **Newcastle Group.** Tel. (049) 59 2734 c/- Sec. 4 Pemell Street, Toronto, 2283.
Meets 4th Wednesday at the John Young Community Centre, Thomas Street, Cardiff.
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Australasian indigenous orchids.

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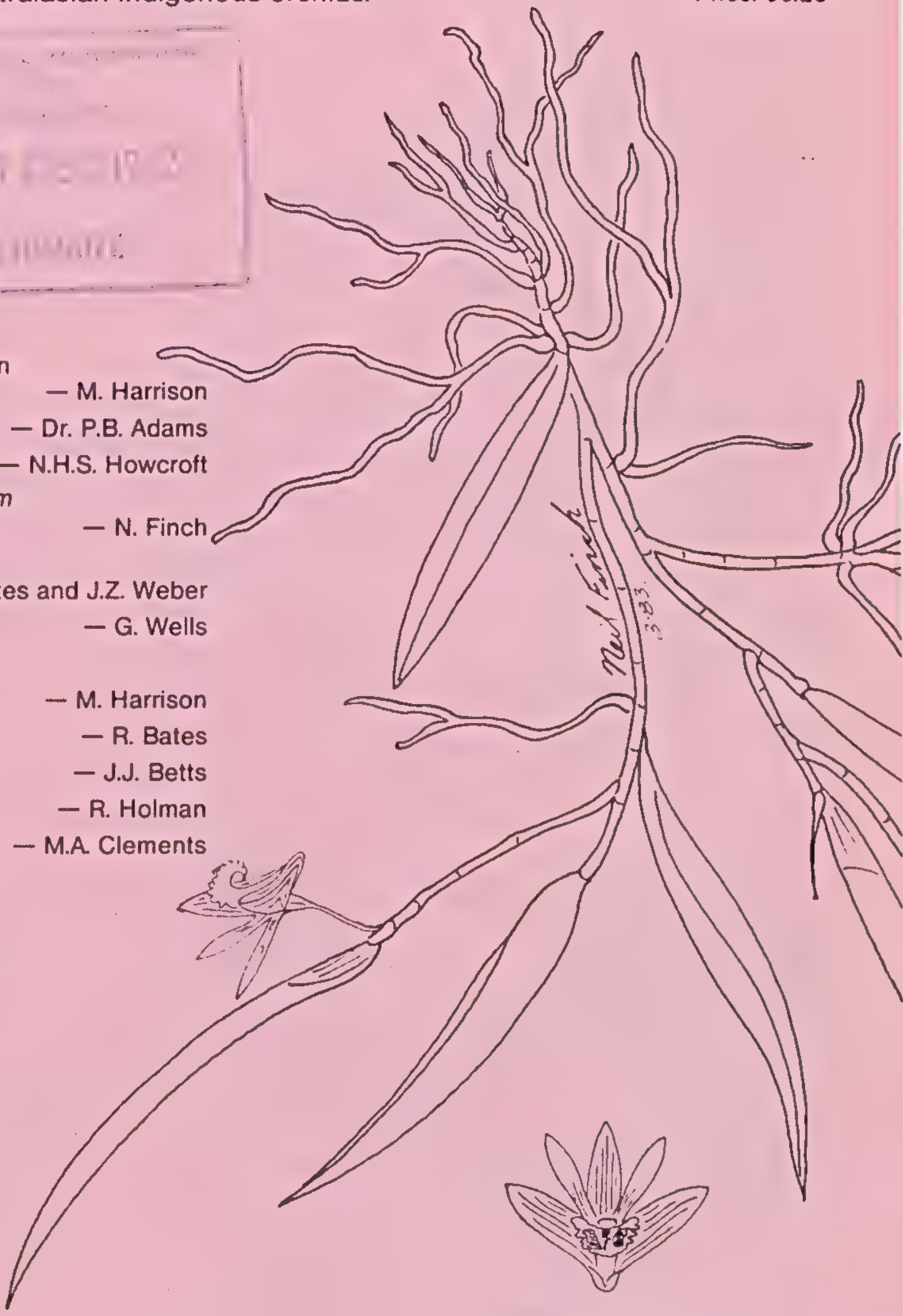

Dendrobium pugioniforme
x *D. striolatum* (Nat. hybrid)
drawing: Neil Finch

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Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

With *The Orchadian* half-way through its twenty-first year of publication it is very satisfying to be able to give our readers a touch of colour for the first time. This December issue seems to be an appropriate one in which to begin this new phase. It comes to us for Christmas – even though Santa Claus is in no way responsible. It is fitting, too, that our usual report on the colourful exhibits at the Mona Vale Spring Show should be the first article to take advantage of colour.

Contributors of articles will, in future, have the opportunity to illustrate their papers in colour – even though this will be limited to two pages initially. Both photographs and high quality botanical drawings may contend for these pages. We have always regretted that our reproductions of the beautiful work of Collin Woolcock could not be presented in colour. We hope to make amends for this in future.

Donors to our Colour Fund will be interested to hear that this first, limited, venture into colour has been achieved *without* drawing on the Colour Fund and without increasing the subscription. If the Fund (now held in trust) swells sufficiently in the future it will be used to increase the colour content of *The Orchadian* rather than to maintain the present two pages. Therefore, like Oliver Twist, we are asking for more. After all it is Christmas – just the time to cast some bread upon the waters and watch for the results. Readers who have not yet completed their subscription renewal form for 1983-1984 might well consider making use of the part that says "Optional donation to Colour Fund $ . . . ."

What next? What about a new editor for *The Orchadian?* ANOS Council and members who attended the AGM last August were informed by me the time has come (as the Walrus might have said) to talk of many things – especially the need for a new editor. I should like to take a rest when I have completed Volume 7 (and its Index) in June, 1984. I have enjoyed the duties of Editor over the past seven years. It has been stimulating, educational and satisfying; but all good things must come to an end. And what better time for a change of Editor than at the beginning of Volume 8 in September, 1984? A new Editor would bring fresh ideas – and perhaps a new format – to *The Orchadian.* Aspiring editors might please think it over. Think of all the new species, new discoveries, new techniques that you can learn about. Indulge your creative instinct in planning the design and layout of the journal each quarter. In my opinion it could be the chance of a lifetime! You can take it from me that previous editing experience is NOT a prerequisite. This job is very different from that of editing a monthly newsletter – very different. All you need is a love of orchids (necessary but *not* sufficient) and a love, respect and understanding for words. Our very high calibre contributors are the real lifeblood of *The Orchadian.* They are all over the world and the fortunate editor does *not* have to pester them. He (or she?) just makes friends with them. Don't miss this opportunity. Talk with ANOS Council and/or myself about it – soon!

FEEDBACK AND FOLLOW-UP

- Among the recommendations formulated by the ANOS Advisory Committee on 13 August, 1983, were the following:

"1. That both 'ANOS Group' and 'Affiliated Native Orchid Society' be defined within the ANOS Constitution as follows:
  (a) 'ANOS Group' – a society or group having objectives consistent with the ANOS Constitution and formed with the knowledge and approval of the parent body.
  (b) 'Affiliated Native Orchid Society' – a society or group having objectives consistent with the ANOS Constitution and whose Constitution has been submitted to and accepted by ANOS Council.

"2. That the procedure for affiliating with ANOS, as set out below, be adopted:
  (a) An orchid society requesting affiliation with ANOS should make its request to ANOS Council and submit its Constitution, Rules and/or By-laws.
  (b) ANOS Council will review the submission and, if the Society's Constitutional objectives are consistent with those of ANOS, will grant affiliation."

These recommendations were discussed by Council at its monthly meeting No. 213 on 1 November, 1983, and adopted with some amendments designed to distinguish more precisely between Groups, Associated Native Orchid Societies and other societies which are merely subscribers to *The Orchadian.* The new definitions will be formally announced to members and societies in the near future.

- *Corrigendum:* At p. 210 of the September issue the caption to Figure 1 referred to "silver beech". This should read "silver birch".

CONSOLIDATED INDEX TO *THE ORCHADIAN*
Volumes 1-5

The Orchadian's first fifteen years (1963-1978) have been fully indexed by John S. Womersley, botanist, of Adelaide; and we are about to have the Consolidated Index typeset and printed. The cost to readers will be $5.00 (Australian) as notified in our September 1983 issue. That price includes postage charges within Australia. Orders from overseas should be accompanied by a bank draft payable in Australian dollars and must include an extra $2.00 to cover postage.

There has been a good response to our request for advance payments to facilitate our financing of the production costs; however the ANOS Hon. Treasurer strongly advises us all to make as many more advance orders as possible and as soon as possible. We wish to avoid printing too many copies in excess of immediate requirements. Please do not defer your decision and run the risk of disappointment later on.

CULTIVATION BASED ON HABITAT OBSERVATION
VIII *Dendrobium falcorostrum* FitzG.

by Michael Harrison

During the October long-weekend, my dear, long-suffering but understanding wife and I visited the Barrington Tops area. It had been some years since my last visit and I was looking forward to renewing my acquaintances with two very special inhabitants of the region: the beautiful Negrohead Beech (*Nothofagus moorei*) and its equally lovely dependant, *Dendrobium falcorostrum.*

With the children safely tucked away back in Sydney with their grandparents, we arrived at Mt Allyn Park at about 9.00 p.m. and set up camp by the harsh glare of the headlights. In the surrounding darkness, the invisible sounds of night were, as always, somewhat intimidating, so we ate a hurried supper and retired to the safety of the van for the evening. The next morning broke clear and fresh, with a chill in the air and a breeze in the tree-tops. I have always found it impossible to sleep past daybreak when in the bush, and a pre-breakfast constitutional seemed to be in order. Of course, Roslyn agreed when I woke her.

We strolled in silence down through the picnic area and along one of the many paths which fan out to take visitors into the forest proper. After a few hundred metres the path seemed to disappear; so we gave up any attempt to follow it and struck out on our own. The forest floor was remarkably open, consisting mainly of a wealth of ferns of many species, but dominated by one of the "bracken" type ferns. It was ubiquitous. The only obstacles we encountered were numerous fallen branches and limbs and, every now and then, a whole tree which had crashed to the ground during some by-gone storm. It always amazes me how quickly these giants of the forest are reduced to nothing once they fall. Boring insects riddle their mammoth trunks, passing the wood they devour through their bodies and turning it into pulp. Bacteria and fungi are both relentless in their assaults upon the timber, breaking it down, changing its structure, softening it and allowing moisture to penetrate to the very heart. Living plants, especially the mosses and ferns, colonise the prostrate trunks, sending their roots deep into the soft tissues, extracting nutrients and, again, destroying the structure of the wood. And finally, scratching and digging animals and birds break up and distribute the rotting remains in every direction, so that they may be turned back into the soil by the tireless army of earthworms. Here, these nutrients are used over and over again by each nw generation, the same building blocks of life, recycled and recyclable forever.

The further we walked, the more I became aware of the mood of the forest. It was sombre, perhaps even a little melancholy, and yet not at all oppressive. It had an old-world spirit, a heaviness of substance and mass which gave it an atmosphere unlike any other forest type I have encountered in this country. Above our heads a few wisps of cloud intermittently drifted through the uppermost branches, their silent passage adding to the magic of the moment. We walked onwards, down a gentle slope leading to a small trickle of water bubbling up out of the ground: a spring. Here the ground started to become boggy and, looking ahead, I could see the forest opening up. A little further on we came to the edge of a swamp, probably a part of Burraga Swamp. The Beech was thinning out and I had inadvertently brushed my hand against a nettle, so we decided to retrace our steps and have some breakfast. Forty five minutes later we arrived back at the park. We had been away for over three hours and it had passed so quickly.

Although *D. falcorostrum* does not occur as prolifically in Mt Allyn Park as it does elsewhere, we had, of course, seen it during this relatively short tour. It grew on the upper trunks and branches of the Beech, mostly only as individual clumps, but occasionally in great masses covering an entire limb. It was in flower at the time and my opinion of this orchid as possibly Australia's most beautiful indigenous species was reaffirmed. Most plants were a profusion of white, and against the dark background of the trunk of the Beech, the flowers were highlighted magnificently. And yet, it was the overall beauty of the forest itself that impressed me most of all. It seemed the obvious and natural place to see *D. falcorostrum*, not, as one is accustomed to seeing it, growing in a pot on a bush-house bench. Here it was a part of the living forest, striving for survival; no more and no less than any other plant or animal in its domain.

The natural relationship between this orchid and its host is a vital one, for *D. falcorostrum* is totally dependent upon *Nothofagus moorei* for its survival. Certainly, it is occasionally encountered growing on other trees in Beech forest and sometimes even on rocks; but in the final analysis it cannot survive without the Negrohead Beech. I have heard it said of *D. falcorostrum* that only one plant in two hundred is capable of holding a pod. I do not know how true this is (frankly, I very much doubt it) but it does appear to be somewhat less fertile than many other species. Hybridists do seem to have trouble using this species as the pod parent in cultivation and over the years my own attempts at sibling pollination have been, quite literally, fruitless. Assuming this to be so under natural conditions, the germination rate must be relatively high, for *D. falcorostrum* is quite common within its habitat. I believe it must be the nature of the bark of the Beech that accounts for the success of this orchid and, generally speaking, the seed of *D. falcorostrum* needs the bark of the Beech to germinate and grow successfully. The bark is fibrous and flakey, soft to the touch, almost spongy, and extremely moisture-retentive. The orchid seed, once lodged in a tiny crevice, germinates in this cool, moist situation and grows quickly. As the seedling develops, it sends its roots deep into the thick layers of bark, where the permanent moisture ensures strong and sustained growth. A mature plant has an extensive root system, much of it buried within the bark or under the layers of epiphytic mosses and ferns which usually occur prolifically on the trunks and branches of the Beech.

The Negrohead Beech is hardly an elegant tree, its tall, unbranched bole and relatively short lateral limbs giving it a rather heavy appearance. Many specimens also produce suckers from around their bases which give these trees a distinctly untidy look. But, in spite of these faults, the Beech has a style and grace of its own. The genus to which the Negrohead Beech belongs, *Nothofagus*, extends from south-eastern Australia, through Tasmania and New Zealand to Chile and Argentina in South America. Members of this genus are usually found in cool, highland areas where the soil is deep and rich and where rainfall is high. Australia has four species of *Nothofagus*. The Negrohead Beech is the only *Nothofagus* species which extends into subtropical regions, occurring as it does in north eastern N.S.W. and in a couple of isolated spots in the N.S.W./Queensland border ranges.

The distribution of the Negrohead Beech is sporadic. Its southern limit is the Barrington Tops area in central eastern N.S.W.; and between this location and the N.S.W./Queensland border it occurs in several places, most notably on the Dorrigo Plateau. It reaches its best development at altitudes between 1000 metres and 1500 metres and may attain a height in excess of 40 metres where conditions are optimum. Within its altitudinal range the Negrohead Beech is quite dominant above 1200 metres and may extend above 1500 metres in sheltered positions along creeks and in situations where there is protection from the west. Even between

1000 metres and 1200 metres, where it generally shares its environment with warm temperate rainforest trees such as Coachwood (*Ceratopetalum apetalum*) and Sassafras (*Doryphora sassafras*), it still tends to dominate the forest by virtue of its size. True Beech forest, above 1200 metres, is known as cool temperate rainforest, or montane forest, and is quite distinct from warm temperate rainforest in that the Beech occurs in almost pure stands with a very open understory, often consisting predominantly of the Soft Treefern (*Dicksonia antarctica*). There is, of course, no clear cut boundary between these two forest types and they merge at differing altitudes according to location, but usually between 1100 metres and 1300 metres. In some places the Beech even extends into subtropical rainforest below 1000 metres, but only as scattered individuals. Beech forest is quite tolerant of frost and even a fall or two of snow in winter is not uncommon in the Barrington Tops area. Unlike the warmer rainforest types, epiphytic orchids are not common in cool temperate rainforest and only those able to withstand extreme cold (down to −10°C) will be found. Apart from *D. falcorostrum*, the only other species I have seen on Beech are *D. pugioniforme* and *Sarcochilus falcatus*. On the edges of Beech forest at lower levels there commonly occur three tree species of particular note. These are Blackwood (*Acacia melanoxylon*), Mock Orange (*Pittosporum undulatum*) and Tree Heath (*Trochocarpa laurina*), all of which are prolific hosts to *S. falcatus*. In some places it is possible to see literally hundreds of plants of *S. falcatus* on individual trees and such a sight during the flowering season is a memory to be cherished.

D. falcorostrum occurs mainly high up on the main trunk and lateral branches of the Beech, where it may form huge clumps consisting of many hundreds of pseudobulbs. When plants of these dimensions occur side by side, as they often do, then it becomes impossible to discern where one ends and the next begins, and the host limbs are commonly completely obscured from sight. Sadly, the weight of such a mass is often its own downfall; so that following wet, windy weather it is not uncommon to find large amounts of *D. falcorostrum* on the forest floor. Unless rescued by a sympathetic passer-by such plants are doomed; for wallabies very quickly devour the leaves and many of the pseudobulbs, and fungi and bacteria quickly reduce the remainder to a soggy mess. Such is life.

Ah but what a thrill it is to see *D. falcorostrum* in situ, alive and thriving fifteen or twenty metres above our heads, supported by the mighty Beech. The canopy provided by the foliage of the Beech is fairly heavy but where a shaft of sunlight penetrates to illuminate a mass of crystalline white flowers the effect is unforgettable. The perfume is unmistakable and on a sunny spring morning it carries for hundreds of metres. Within a forest situation it is quite beautiful, although in the confines of a small bush-house it may be somewhat overpowering. Because of its preferred altitude Beech forest is often shrouded in mist and fog, and at these times, in particular, the heavy shadows and profound, echoing silence combine to create a cathedral-like atmosphere. One feels distinctly dwarfed by the giant trees, their heads lost in the clouds and their ancient, gnarled trunks standing in silent vigil to all that passes. It is a sobering thought to consider that these trees may be hundreds of years old and that those germinating and developing now will outlive our grandchildren.

With this in mind, it is infuriating to think that, until only a few years ago, the policy of the Forestry Commission in N.S.W. was to clear-fell areas of Beech and to plant commercially desirable species such as Blackbutt (*Eucalyptus pilularis*). Destruction of such rare and fragile beauty is beyond my comprehension and I am thankful that sanity (or perhaps the weight of public opinion) has prevailed and Beech forests are now being preserved. The plight of *D. falcorostrum* is, however, of some concern. Without doubt, it is one of our most popular and widely cultivated orchids, and this fact makes it vulnerable to exploitation. Although nearly all areas of Beech are now protected within national parks, nature reserves and state forests (where it is no longer logged), the trade in *D. falcorostrum* plants goes on unabated! Where are these plants coming from? There is apparently a privately owned tract of Bech forest somewhere on the Dorrigo Plateau which is still being worked for *D. falcorostrum* (and this means felling the Beech and stripping the branches of the orchid) but I do not for one moment believe that all the *D. falcorostrum* offered for sale originates from this single slaughteryard. It is easy for an unscrupulous professional collector to enter a state forest or even a national park and obtain *D. falcorostrum*. Even if he is not willing to risk attracting attention by using a chainsaw, a pair of climbing irons are just as effective a method of filling the back of a truck. And when he gets it back to the nursery, if on the off-chance a National Parks and Wildlife Service inspector calls, you can be sure that his Commercial Pickers Licence states that he has permission to collect *D. falcorostrum* from the property of a private landholder somewhere. By this time it is irrelevant that the private property specified on the Pickers Licence is, in fact, a rural property with absolutely no Beech forest whatsoever, for the Licence has been validated by the overworked and understaffed local N.P.W. Service Office without any check being made that *D. falcorostrum* (or any other orchid for that matter) does occur on that property.

I believe that an embargo should be applied to *D. falcorostrum* ***by way of invalidation of Pickers Licences which list this orchid, and that any new Licences applied for should be rejected on the same basis, as a matter of course.***

In effect, this would make it illegal to pick *D. falcorostrum*, *and nurserymen would no longer be able to hide behind Pickers Licences with bogus private property locations. The long-term outcome of this would be to encourage nurserymen to propagate from seed. Hopefully, they will use better than average parents and the resulting selected progeny, after a few generations, will be of such high quality that in ten or fifteen years from now wild plants will be considered so horticulturally inferior that the demand for them will subside. How about that for wishful thinking! I further believe that in addition to D. falcorostrum, Sarcochilus hartmannii, S. fitzgeraldii* and *S. ceciliae* should join the embargo. These species have also suffered shamefully from commercial collectors to the point where they have now almost disappeared from many parts of their respective ranges.

CULTIVATION

D. falcorostrum grows well in cultivation and seems equally at home in a pot or mounted on a large slab of treefern fibre or elkhorn fibre. As long as its requirements regarding fresh air, copious amounts of water and perfect drainage, and medium to heavy shade are met, then it will provide the grower with little or no trouble. The main problem I have found with this species is its reluctance to flower to the best of its ability when grown in cultivation. To see a large plant in full bloom in the bush is an unforgettable experience. The flowers are produced so prolifically that the underlying plant is almost completely invisible. Yet flowerings of this magnitude, which are normal under natural conditions, are rarely seen in cultivation. *D. falcorostrum* generally does flower in cultivation, usually regularly and often impressively, but many growers are unaware of the full potential of this orchid. With each of its pseudobulbs producing an inflorescence, and each inflorescence carrying up to twenty flowers, a plant of only moderate proportions becomes a magnificent specimen able to turn heads even in the most prestigious company.

To achieve such results, the grower must pay attention to the natural environment of *D. falcorostrum* in an attempt to reproduce optimum conditions. The critical ingredient is the cool, humid atmosphere always found in Beech forest, for it is the absence of dehydrating factors such as high temperatures and westerly winds that accounts for this orchid's preference for such situations. The altitude alone tends to keep temperatures down; and this, combined with the vegetation type, aspect and rainfall, creates an environment characterised by high levels of humidity and relatively low temperatures. The high rainfall especially is a major factor to be considered with regard to the culture of *D. falcorostrum*. The mountainous areas in which this orchid thrives are noted for their rainfall and I have been told that the township of Dorrigo holds the Australian rainfall record of eighty-four centimetres in twenty-four hours. The Dorrigo Plateau is, or perhaps more correctly, was, the main stronghold of *D. falcorostrum* and along with its common name of "the Beech Orchid", it also used to be known as "the Dorrigo Orchid". Unfortunately, over the years, large tracts of Beech have been destroyed by pastoral and forestry activities, and *D. falcorostrum* is now far less common than it was when that name was coined. As well as direct rainfall, these highland Beech forests are often shrouded in dense cloud, sometimes for days at a time, and much moisture is provided in this manner. At such times, although it is not actually raining, everything in the forest becomes saturated, as the moisture-laden fog penetrates into every nook and cranny.

A well drained but somewhat moisture-retentive mix is required for pot culture of *D. falcorostrum*. I have found a mix consisting of equal parts medium pine bark, 10mm river pebbles and commercial cymbidium compost (containing peat moss, course sand, rice hulls, etc.) serves well. Both terracotta and plastic pots give good results. When mounting a plant on a hanging slab be sure to choose a large enough piece to allow good root development. A strong growing, vigorous orchid such as *D. falcorostrum* requires an extensive root system to sustain its bulk, and too small a host will severely limit its long-term performance. A very successful host is the basal portion of the trunk of a *Dicksonia antarctica* treefern, but these are not readily obtainable and I am not suggesting that growers go out into the bush and chop down treeferns. Nurseries dealing in treeferns may be able to provide these but it may be necessary to shop around. About 80% shade seems to suit *D. falcorostrum*, although an established, well-watered plant will tolerate a bit less shade and will probably flower better with that little extra light. This species likes to be fed and the application of any of the commercial plant foods at half strength is beneficial every two weeks or so during the growing season.

D. falcorostrum is a very stable and homogeneous species with little variation between populations throughout its range. Its occurrence is strictly regulated by the occurrencce of the Negrohead Beech which itself exists only in specialised situations. these "islands" of Beech are, in effect, isolated colonies of *D. falcorostrum* which probably have very little genetic interaction between colonies. The distances separating the major races of this species, the Barrington/Gloucester Tops populations, the Mt Banda Banda populations, the Dorrigo/New England populations and the Border Ranges populations, are considerable; and yet *D. falcorostrum* remains remarkably uniform over the whole of its range. Some clones produce larger flowers than others but this variation is to be found in all species and cannot be considered as botanically significant.

It would appear that *D. falcorostrum* is a well-developed and clearly defined orchid species which is extremely successful within its specific habitat and has little or no need to change or evolve further.

Lot 2, Howes Road,
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November, 1983

BOOK REVIEW

Clifton Pugh's "A Year of Orchids"

By Dr P.B. Adams

Australian artist Clifton Pugh has been observing and painting native orchids and wildflowers on his property at Cottlesbridge near Melbourne for the past fifteen years. His concern has been to record on canvas a superb range of terrestrial orchids which are rapidly declining with the expansion of the metropolitan area. With the assistance of botanists Campbell and David Beardsell to write a text, and his wife Adriane Strampp and son Dailan to illustrate with line drawings, he has published a series of paintings in a book, "A Year of Orchids".

"A Year of Orchids" illustrates the progression of flowering of the 91 species of the Yarra Valley. In a few places only, they remain in such intensity of numbers to be a major botanical feature and attraction within easy reach of Melbourne. Clifton Pugh in his definitive style has captured the bizarre beauty of over 40 orchids in 28 superb colour plates. He has also caught, in the background of each painting, the atmosphere of the dry undisturbed bushland habitat of the region. The accompanying collection of beautiful line drawings by Adriane Strampp, Dailan Pugh and David Beardsell enable easy identification of species.

Conservation is a major theme of the book, which develops from the disturbing lists presented of species which have entirely disappeared from some areas, and the six species that have become extinct. Twelve further species are locally extinct in the Yarra Valley, and another 22 are known from less than five small colonies. The book is an important and timely contribution to the appreciation that is required to halt the complete destruction of habitat, which is often equated with "progress". In areas where local landholders and communities have a knowledge and pride in their own bushland, habitat and orchids *have* been successfully preserved in wildflower sanctuaries. More often, clearance has been complete before anyone considered what might be lost.

Plant descriptions alongside the line drawings help to confirm identification. The text offers new information on distribution and biology, and a synthesis of what is known about habitat, history and conservation status. Exact locations of species have not been revealed as this would invite destruction by ruthless collectors. Many of the species are not easily adapted to cultivation, and some will not grow at all outside their habitat. "Orchids should be left in the bush as they are found, and the area around them disturbed as little as possible" (page 12).

This is a book for the native orchid enthusiast, especially those with a strong interest in terrestrials. The bushwalker, naturalist, botanist and art lover will all find value in the 208 pages, containing over 100 illustrations. Many of the species extend throughout Victoria and to other states. The book will therefore appeal to people throughout Australia, and the habitat descriptions will help those who wish to create an environment for successful cultivation.

There have been only a small number of major books about Australian orchids, produced at very irregular intervals. Nearly all of these, including Nicholls, Dockrill and Fitzgerald, are long out of print and when available are priced at several hundred dollars. A limited edition of 1500 copies of this new book is available at bookshops. Orders can be made direct to the publisher Richard Griffin, P.O. Box 147, South Melbourne, Vic. 3205. At $75, the book is an important contribution to the study of Australian orchids, and a collectors' item of outstanding value.

15 October, 1983

Department of Botany,
University of Melbourne.

CONTRIBUTIONS TO THE ORCHID FLORA OF THE ARAUCARIA FORESTS IN NEW GUINEA – 5 *Bulbophyllum gjellerupii* J.J. Smith

By N.H.S. Howcroft

During a field trip in 1974 to the Pimaga *Araucaria cunninghamii* forests, in the Southern Highlands province of Papua New Guinea, the author collected a number of unflowered *Bulbophyllum* species which have since flowered in captivity enabling them to be identified. *Bulbophyllum gjellerupii* was one of those identified and there appear to be no records of this species having been found in Papua New Guinea before. The species is described here and illustrated.

Description: *Bulbophyllum gjellerupii* J.J. Sm. in Nova Guinea XIV (1921) 481-482, t. LXXIX, fig. 124. Type: Live plant in cultivation, Bogor, Sub. n. 344. Collector K. Gjellerup, north-eastern part, Jaya Pura in Irian Jaya (formerly Dutch New Guinea) – Figure 1.

Epiphytic: rhizome creeping, stout, 4-7mm diameter, internodes around 5-9, producing tubular sheaths at nodes (fig. 1A), *Sheaths* producing overlapping groups of fibres. *Pseudobulbs* 55-85mm apart, obliquely ovoid, compressed, partly prostrate, 8-15 x 7-8mm, unifoliate. *Leaf* more or less erect, leathery, oblong-elliptic, 210-240 x 57-63mm, with a short channelled petiole, light green. *Inflorescence* produced from nodes of rhizome, erect, circa 70mm long, single flowered; peduncle much shorter than pedicel, circa 8mm long with several short, tubular, amplexicaule sheaths. *Flower* fairly large, perfumed, fleshy, glabrous, facing upwards, sepals and petals erect, apex of sepals connivent (fig. 1A); *dorsal sepal* ovate at basal half, remainder acuminate, acute, concave, white to cream on dorsal surface, opposite face lemon with two larger patches of magenta and maroon flecks near the basal portion, margins magenta or pale maroon, 37-40 x 7.5-8.5mm (fig. 1B); lateral sepals similar, sigmoid, obliquely ovate, triangular at base, remainder acuminate, acute, slightly concave, dorsal surface as for dorsal sepal, opposite face lemon, margins with dense magenta and maroon spots, veins outlined by magenta spots, 39-42 x 9.9-11mm (fig. 1D); *Petals* at base oblong elliptic, remainder acuminate, partly canaliculate, acute, pale lemon, basal portion with dense magenta blotches and bars, 31-37 x 5-6mm (fig. 1C); *Labellum* small, mobile, curved, glabrous, laterally compressed, ligulate, laterally falcate-triangular, at base approximately rhombic-quadrate, truncate, on top, concave with a divergent lobe on either side (figs. 1E, F and G), lamina slender, narrowly oblong, apex truncate, laterally compressed (figs. 1E and G), dorsal section canaliculate (fig. 1F), pale yellow, circa 7 x 4mm; *Column* almost straight, dorsally slightly curved upwards (fig. 1E), laterally compressed (fig. 1H), glossy, light yellow, circa 4 x 2.5 x 3mm, with margins forming obtusely angled, blunted stelids; *Column foot* slightly less than 90° angle to column, curved, 7 x 1.5-2mm (figs. 1E and H); *Anther* distinctly beaked, obliquely conical, pale yellow, 1.3 x 1.5mm (figs. 1I and J); *Pollinia* in two pairs; *Stigma* moderately large, quadrangular.

Distribution: Very little is known about the natural range of this species and at present it is known only from the Jayapura area in Irian Jaya and from the Southern Highlands in Papua New Guinea where it occurs at Pimaga (Lat. 6°30′S, Long. 143°30′E) which is 900 metres above sea level.

Habitat: *B. gjellerupii* was found growing on the stems of young trees in the understory of Pimaga *Araucaria* forest. The situation is densely shaded and very moist. Like other members of its section, this species can probably tolerate much stronger, more direct sunlight. The locality is in a high rainfall area (4000mm/annum) and the understory is wet or moist for most of the year.

Cultivation: The species can be grown successfully on treefern, hardwood slabs and coconut husks. The author's main plant is established on a live branch of *Calliandra*, in full shade, at Bulolo (alt. 700m). Conditions here are considerably drier, and more seasonal than at Pimaga, with the annual rainfall around 1,600mm. In spite of this, the condition of the captive specimens is good and growth is satisfactory.

Flowering: Flowers are produced sporadically throughout the year but occur more frequently between September and December. Each flower lasts 3 to 5 days and produces a pleasant odour which is quite strong in the mornings. As with other species of this section the flowers attract fruit flies of the genus *Dacus* which pollinate these orchids.

Notes: *B. gjellerupii* belongs to the section *Stenochilus* J.J. Sm. and is related to *B. baileyi* F. Muell. which has been erroneously included in the section *Sestochilus* (Breda) Benth & Hk.f. by Schlechter (1913) and Dockrill (1969). For descriptions of these sections, readers are referred to the works of Bentham and Hooker f. (1883), Smith (1914), Holttum (1957), Henderson (1954) and Seidenfaden (1979). In reviewing this literature and comparing flowering specimens in the field, it appears that both sections mentioned need to be defined a little more carefully.

From Smith, Schlechter and Kraenzlin, eleven species have been described for the section in New Guinea. Another species has been recorded by A. Millar (1978) and the author for Papua New Guinea, namely *B. macranthum* Lindl., which brings the total to twelve. However, it is very likely that some of these are synonymous. The species described are as follows:

B. caryophyllum J.J. Sm.
B. gerlandianum Kranzl.
B. gjellerupii J.J. Sm.
B. grandifolium Schltr.
B. guttatum Schltr.
B. hahlianum Schltr.
B. macranthoides Schltr.
B. macranthum Lindl.
B. tollenoniferum J.J. Sm.
B. tortum Schltr.
B. truncicola Schltr.
B. werneri Schltr.

Literature cited:–

Bentham and Hooker f. (1883) Genera plantarum 3 : 502.

Dockrill, A.W. (1969) Australian Indigenous Orchids 1 : 535-537.

Henderson, M.R. (1954) Malayan Wild Flowers, Monocotyledons : 88-89.

Holttum, R.E. (1957) Orchids of Malaya, Flora of Malaya 3rd ed. : 416-418.

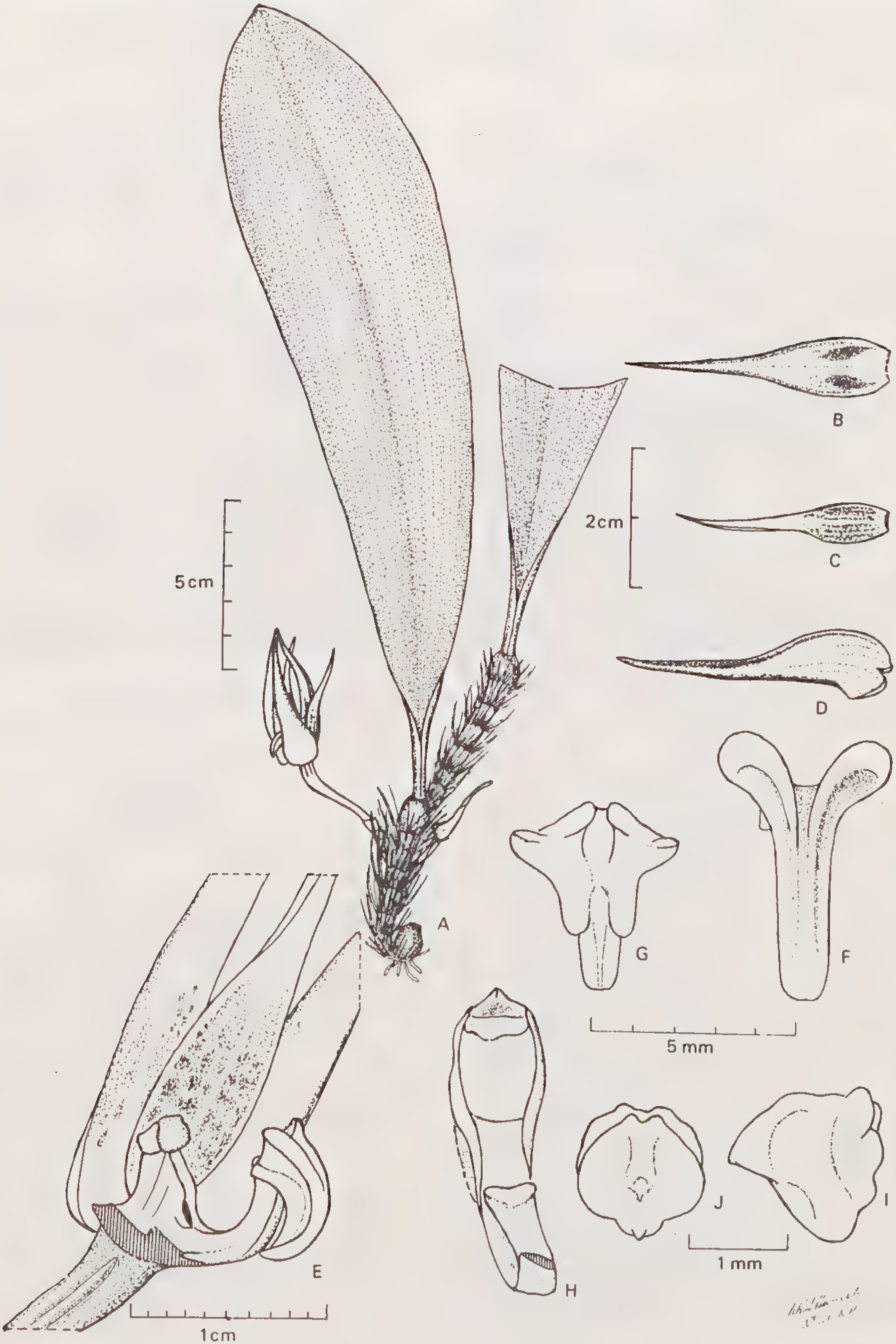
Millar, A. (1978) Orchids of Papua New Guinea : 54-56.

Seidenfaden, G. (1979) Dansk Botanisk Arkiv. Orchid Genera in Thailand VIII, Bulbophyllum, Bind 33, NR3, 13-17.

21 September, 1983

P.O. Box 134
Bulolo,
Papua New Guinea.

Fig. 1 Bulbophyllum gjellerupii J.J.Sm.



Drawing: N.H.S. Howcroft

Dendrobium pugioniforme x *D. striolatum* – A Natural Hybrid Reported

by Neil Finch

In May 1982 during a trip to the Central Coast of N.S.W. my father and I visited the highlands west of Lake Macquarie. The hills rise quite steeply to several hundred metres and, with this rise, a distinct change in vegetation occurs, from the dry, lower, shrubby forest of the lowlands to tall moist grassy forest which, in protected ravines, becomes poor rainforest.

After a short time it became obvious that this area supported a wide range of orchid species that required quite different conditions, within close proximity of each other. In the exposed areas we observed large colonies of *Dendrobium speciosum, D. linguiforme* and *D. striolatum* covering large areas of cliff face. In the more protected areas clumps of *D. gracilicaule* grew on the trees while close to the water courses colonies of *Sarcochilus olivaceus* and *Plectorrhiza tridentata* were found.

Later that day, while rock-climbing high on the eastern escarpment we observed large areas of *Dendrobium striolatum* and *D. pugioniforme* growing intertwined on the rocks in semi-shade. On one of the rocks we noticed among the *D. striolatum* and *D. pugioniforme* a clump of what at first glance appeared to be a very slender leafed form of *D. pugioniforme.* On closer inspection it became obvious that this plant was indeed something different as its vegetative habit exhibited features of both its neighbours, leading me to assume that this was a natural hybrid between the two species.

With a careful inspection of this area over the next few hours we observed 3 individual clones of this putative hybrid, one of which measured several metres in diameter. My thoughts are that the largest clump has at some time been "selfed" and begun to spread its progeny throughout this area, an assumption backed by the presence of several old seed capsules on the large clone. We collected a piece of each clone for future study and recording.

Over the following few months, in winter, these plants proved to be extremely vigorous growers. In fact they have not ceased growing at the time of writing (September 1983).

In September 1982 each of these three plants flowered, confirming the assumption of a natural hybrid.

Description

The growth habit of this hybrid is very much like that of *Dendrobium pugioniforme* in the way it forms long, slender, branching stems extending to lengths of 150cm. The main structural difference is in the leaves which exhibit characteristics in every way intermediate between the supposed parents. They ar more slender than those of *D. pugioniforme,* having an average width of 5mm and an average length of 100mm with some reaching lengths of 165mm. The cross-sectional shape of the leaves varies, a characteristic inherited from *D. pugioniforme,* but usually appears as a cylinder, flattened on one or two sides (figure 1B).

The flowering habit, again is intermediate between the parents. The influorescences have usually one, to occasionally two, flowers which are about 24mm in diameter, widely opening, creamy green with reddish brown striping at the base of the broad sepals, with pronounced striping over the back of the tepals very much as in *D. striolatum.* The labellum is basically white, the midlobe, with deeply wavy sides and with purple markings as in *D. pugioniforme.*

Fig. 1 Dendrobium Pugioniforme

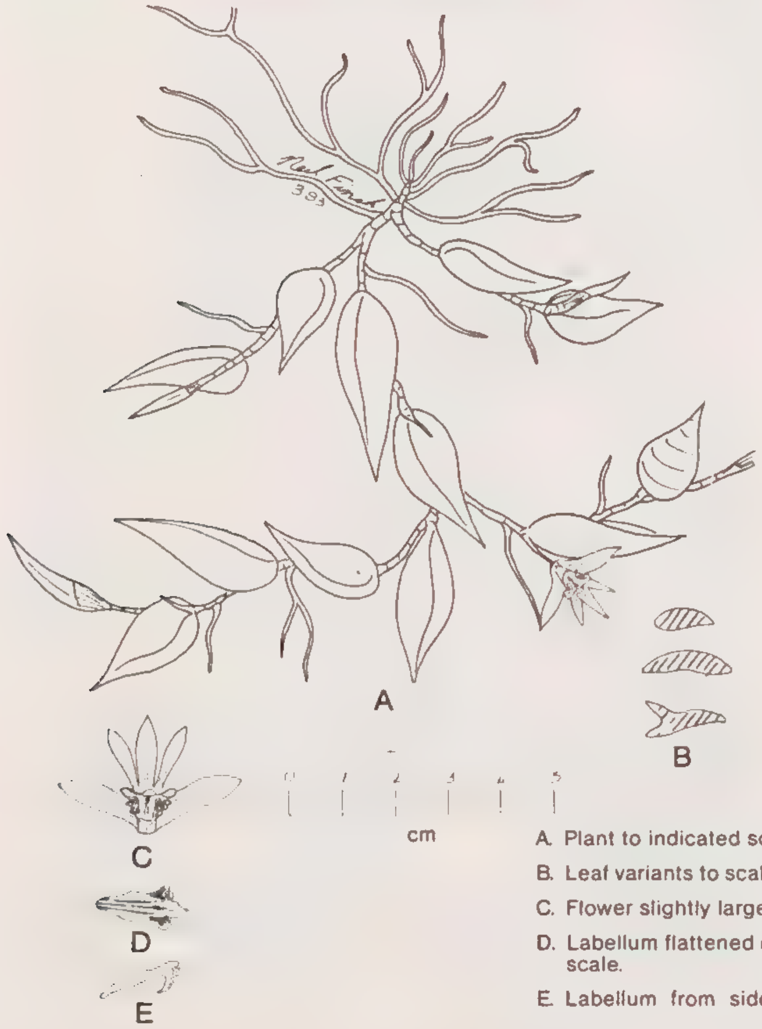
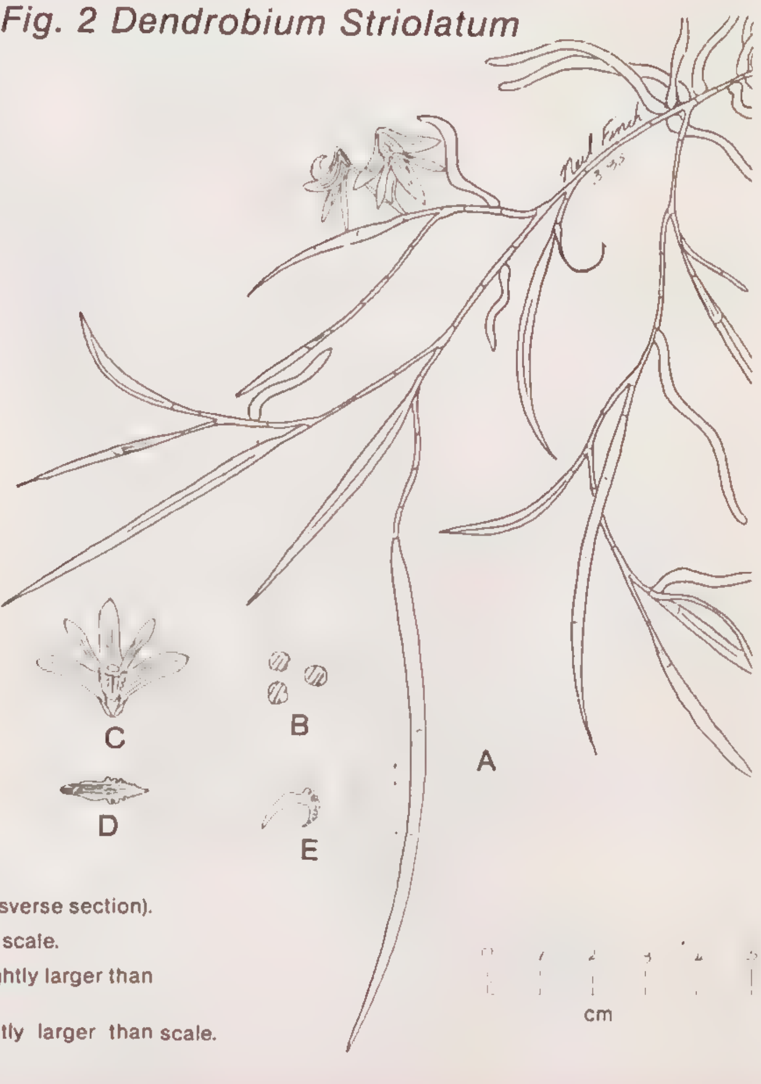


Fig. 2 Dendrobium Striolatum



A. Plant to indicated scale.

B. Leaf variants to scale (transverse section).

C. Flower slightly larger than scale.

D. Labellum flattened out slightly larger than scale.

E. Labellum from side slightly larger than scale.

Distribution

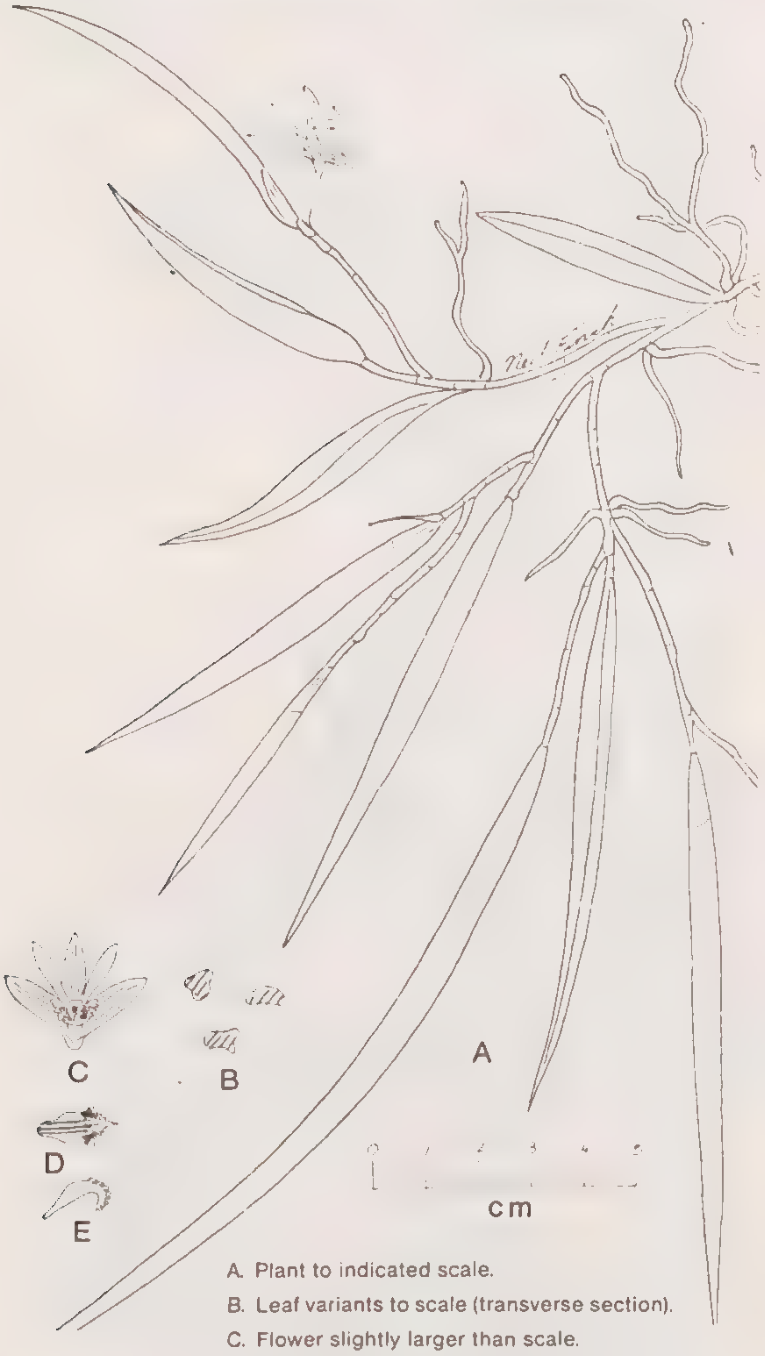
Although we have not as yet searched further to see the extent of distribution of this hybrid in the Lake Macquarie area, my investigations have brought to light two other unreported and distant discoveries: one from the Shoalhaven area by Stuart Penman and another from the Blackheath area by Ron Howlett.

Dr Ben Wallace of the Royal Botanic Gardens, Sydney, who has read this paper, states that "a large plant of this hybrid, *circa* 1 metre in diameter was found by Bob Moar growing on a rock in wet sclerophyll forest near Nowra in September 1980." It now appears, therefore, that this natural hybrid is not as rare as I believed. The Sydney Herbarium now has two official recordings — my own from west of Lake Macquarie, north of Sydney, and Moar's from "near Nowra" (south of Sydney). The two unrecorded discoveries consist of a second plant from the Shoalhaven River area (i.e. near Nowra) by Penman and yet another from near Blackheath (in the Blue Mountains, west of Sydney) by Howlett. This gives us a tentative distribution range, at least 100 km from Sydney. At the time of my own discovery none of the other "finds" had been published — so far as I could ascertain. The speed with which further data have come to light during my preparation of this paper as a result of discussions at ANOS Sydney Group meetings encourages me to believe that other finds will be revealed after publication of this paper. Clearly the distribution could be widespread and may justify the botanical naming of this natural hybrid.

September, 1983

11 Liney Avenue,
Campsie, N.S.W. 2194

Fig. 3 D. pugioniforme x D. striolatum



A. Plant to indicated scale.

B. Leaf variants to scale (transverse section).

C. Flower slightly larger than scale.

D. Labellum flattened out slightly larger than scale.

E. Labellum from side slightly larger than scale.

Editorial Note

On 31 May, 1983, Mr Penman wrote to the editor enclosing an article for *The Orchadian* on the subject of this putative natural hybrid. On 5 June, 1983 I informed Mr Penman of Neil Finch's work already in progress on the same subject and suggested that he should correspond with Neil so that a comprehensive single article could be prepared for publication and reliable data could be reported to the NSW Herbarium.

Stewart Penman's article was accompanied by a good drawing of the plant but this was without flowers. Although he had collected a piece of the plant in September, 1978, in the Shoalhaven River area and it had multiplied well, he had not been able to flower it in the succeeding 5 years in spite of its prolific growth. By contrast, the clones collected by Neil Finch in 1982 were already in bud and promised good flowering for September 1983, when he expected to be able to write and illustrate a detailed report.

Both of these contributors are to be commended for their recognition of a natural hybrid and the need for proper recording of such discoveries.

Dr Ben Wallace informs us (6/10/83) that "the cross *Dendrobium pugioniforme* x *D. striolatum* was artificially made by Mr W.E. Skilicorn of Maitland, NSW, in 1979 (deflasked in December 1980) and is being officially registered by him." Presumably this registration will have been made only after the flowering of one or more of the 3-year-old seedlings. We must assume that the flower (or flowers) of this remarkably young seedling must have been of horticultural merit to warrant registration, but we have no evidence of this. If so, comparison of the man-made and natural hybrids would be a valuable further step in the study commenced by Messrs Finch and Penman.

Another very interesting step would be to attempt the "selfing" of this hybrid. It is hoped that results of any experimentation, as well as any other unrecorded discoveries of the natural hybrid will eventually be reported in *The Orchadian*.

In the meantime we have no doubt that many readers (like Neil Finch) will be wondering why some natural hybrids have been given botanical names (e.g., *Dendrobium* x *grimesii* C.T. White and Summerh., *D.* x *gracillimum* (Rupp) Rupp, *D.* X *ruppiosum* S.C. Clemesha etc) while others have not. It appears that the hybrid *D. pugioniforme* x *D. striolatum* is to be endowed with a non-botanical name now in process of being registered by a Mr Skilicorn but that name is not yet known to us until the R.H.S. registration authority approves and publishes it.

It is important that the editor of *The Orchadian* should have a clear policy on this question and for this reason I prepared a detailed policy statement for my own guidance at the time of publishing *D.* X *ruppiosum* S.C. Clemesha. In terms of that policy the natural hybrid now under discussion would be a candidate for a botanical name providing it had not been already registered with the R.H.S. under a horticultural name. In these circumstances Dr Ben Wallace will give us a definitive paper explaining to our readers the criteria adopted by botanists — as distinct from editors. Meanwhile the article by Mike Harrison at p. 238 (Species From Hybrids?) could be relevant.

October, 1983 **J. J. Betts**

A Putative Hybrid Between *Pterostylis curta* and *P. pedunculata* from South Australia.

An extract from the *Journal of the Adelaide Botanic Gardens* 6(2), 197-200 (1983) has been received from the State Herbarium of South Australia. It contains a paper by R. Bates and J.Z. Weber on the above subject.

In summary: the authors report that a putative naturally occurring hybrid between *Pterostylis curta* R. Br. and *P. pedunculata* R. Br. has been found in two localities near Adelaide. The validity of previous reports of this hybrid is discussed and the characteristics of the hybrid and its parents are tabulated and illustrated.

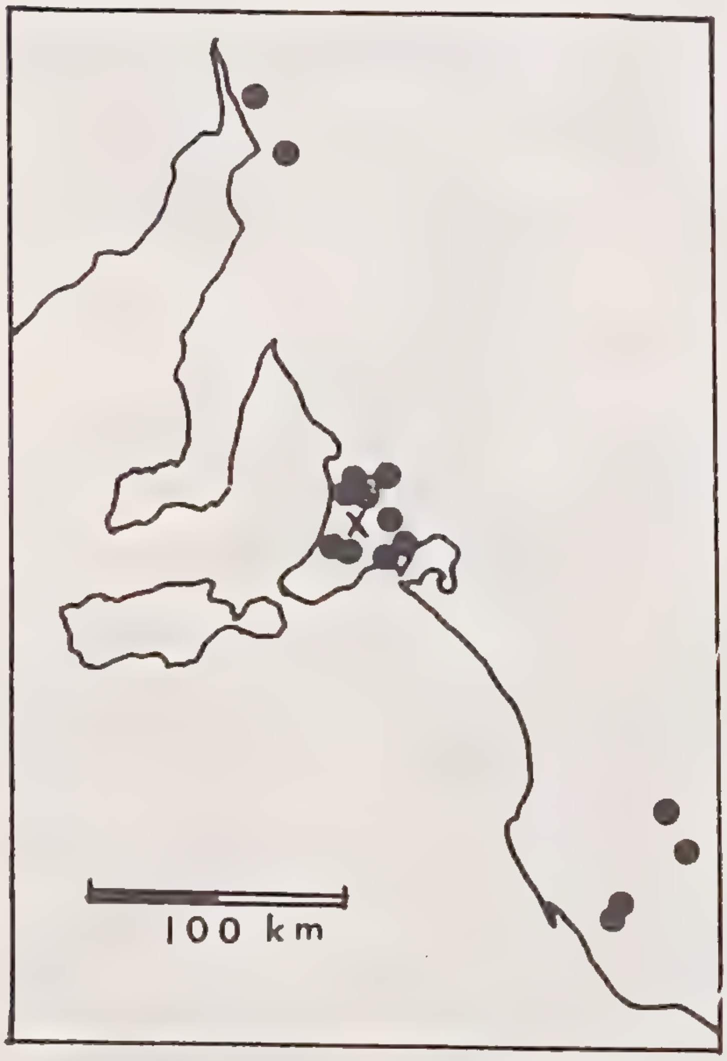
Readers of *The Orchadian* will be interested to learn from this paper that R.D. FitzGerald (1879) illustrated a plant from N.S.W. which he suggested was a hybrid between these two species but Dockrill (1969) and Clemesha (1972) referred FitzGerald's illustration to *P. hildae* Nicholls. This latter view is accepted by Bates & Weber. *P. hildae* occurs in Queensland and north-eastern N.S.W. where it is widespread, mainly near the coast, but is not associated with either *P. curta* or *P. pedunculata.* Nor has it been recorded from South Australia.

Much of the data presented by Bates & Weber is based on several years' observation of a colony of about one hundred hybrid plants in the Belair Recreation Park in the Mt. Lofty Range. In this habitat both parent species occur together with the colony of hybrids — in which there is little morphological variation. This factor together with the dense growing of the colony suggest to the authors that the population derives from a single ancestor by cloning. Each plant generally produces 2-3 tubers annually.

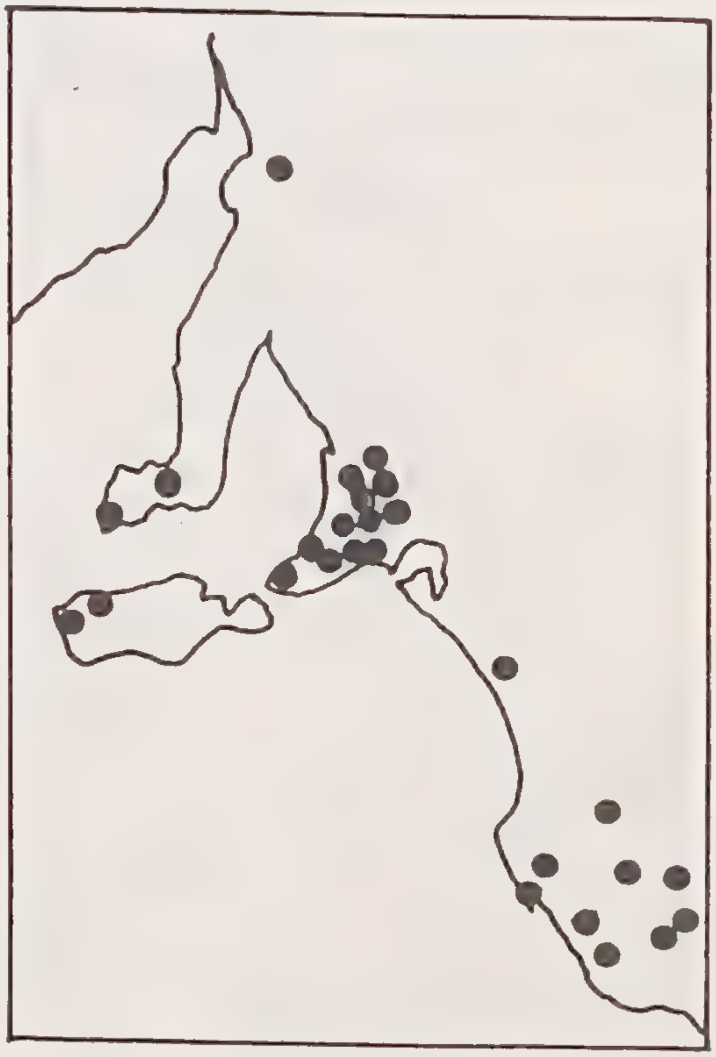
The authors' observations of possible pollinators (2 species of fungus gnats) indicate that the smaller species of fly is the more likely vector for pollination from *P. pedunculata* to *P. curta* but that this would be an uncommon occurrence. None of the putative hybrid plants has yet been observed to produce seed. The uniformity of the hybrids seems to rule out backcrossing.

Maps 1 and 2 (below) and Figs. 1-3 (opposite page) are facsimiles from the extract kindly sent to us by the State Herbarium of South Australia.

—J.J.B.



Map 1. Distribution of *P. curta* in South Australia (X denotes putative hybrid).



Map 2. Distribution of *P. pedunculata* in South Australia.

Selected South Australian specimens housed at AD were examined.

P. curta (From Belair Recreation Park): *H.A. Gunter s.n.*, 30.ix.1929, Long Gully; *R.S. Rogers 4032*, 27.viii, 1909, National Park Belair; *S.A. White s.n.*, 19. vii. 1906, National Park.

P. pedunculata (From Belair Recreation Park); *R.S. Rogers s.n.*, 22. viii. 1905, National Park Belair; *S.A. White s.n.*, 19.vii 1906, Long Gully; S.*A. White s.n.*, early 20th Century, National Park Belair.

Putative hybrids (From Belair Recreation Park and vicinity): *R. Bates s.n.*, 15.ix. 1980, Belair Recreation Park; R. Bates s.n. 9.ix. 1981, Belair Recreation Park (Voucher specimens of hybrid and parent species. also in wet collection at AD); *R. Bates 2252 & 2253*, 8.ix. 1982, Belair Recreation Park; *V. Jacobs* sub *R.S. Rogers 4147*, 23.ix. 1915, Cherry Gardens.

References.

Bates, R. (1981). Man made Australian terrestrial orchid hybrids. *J. Native Orchid Soc. S. Aust.* 5:82.

Bates, R. & Weber, J.Z. (1979). Putative hybrid between *Prasophyllum archeri* and *P. despectans. J. Adelaide Bot. Gard.* 1 (6): 357-360.

Clemesha, S.C. (1972). *Pterostylis hildae* Nicholls. *Orchadian* 4: 30.

Dockrill, A. 1969). 'Australian Indigenous Orchids' vol. 1 (Soc. for Growing Aust. Plants: Sydney).

Fitzgerald, R.D. (1879). 'Australian Orchids' 1 (5). (Govt Printer: Sydney).

Markwick, R.J. & Bates, R.J. (1982). 'Phytogeography of South Australian Orchidaceae'. (Manuscript of Native Orchid Soc. S. Aust.).

Stoutamire, W. (1982). Australian *Pterostylis* — the Greenhoods. *Amer. Orchid Soc. Bull.* 51 (8): 796-803.

Weber, J.Z. & Bates, R. (1978). In Jessop, J.P. 'J.M. Black's Flora S. Aust. ed. 3, 1. (Govt. Printer, Adelaide).

Willis, J.H. (1962): 'A Handbook to Plants in Victoria' 1. (University Press: Melbourne).

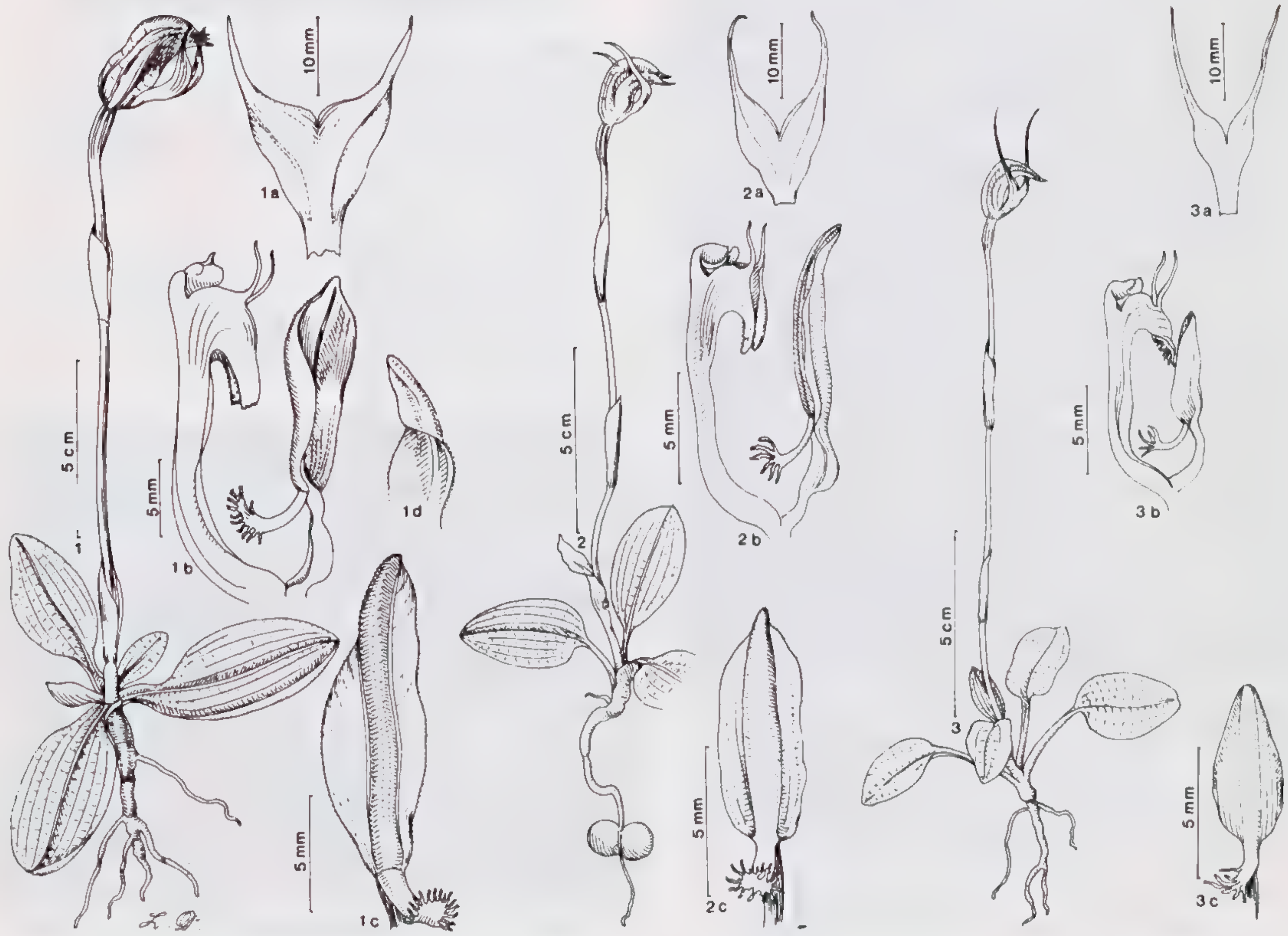


Fig. 1-3. 1. *P. curta*, plant; 2. Putative hybrid between *P. curta* and *P. pedunculata*, plant; 3. *P. pedunculata*, plant. (a. partly fused lateral sepals; b. column and labellum in side view; c. labellum in front view; d. tip of labellum).

ANOS : NINTH ANNUAL SPRING SHOW

by Garry Wells

THE Ninth Annual Spring Show, staged by the Sydney and Warringah Groups of the Australasian Native Orchid Society, was held at Mona Vale on 10th and 11th September, 1983. As usual, this well-known show provided an overview of current hybridising progress with a heavy emphasis on the use of *Dendrobium kingianum, D. fleckeri* and *D. tetragonum* as parents. Our native species were represented by some excellent forms — some of them very rare.

In general, the species sections were of only fair quality owing to the changeable weather and the cold winter that seemed not only to delay flowering but also to inhibit the longevity of the flowers. Regrettably some plants benched had not had time to establish themselves before being permitted to flower. I think new growers, in their enthusiasm, underestimate the strain imposed by flowering upon a plant that has not yet grown a fully functional root system.

A most impressive small plant of *Dendrobium kingianum*, benched by Mr E. Webeck, was stunning in its potential. Nearly 1¾ inches across and of an intense even colour, it had a poor flowering for the size of the plant. (See figure 1). Mike Harrison's *D. semifuscum* was noteworthy for its fine colour and wide segments (fig. 2).

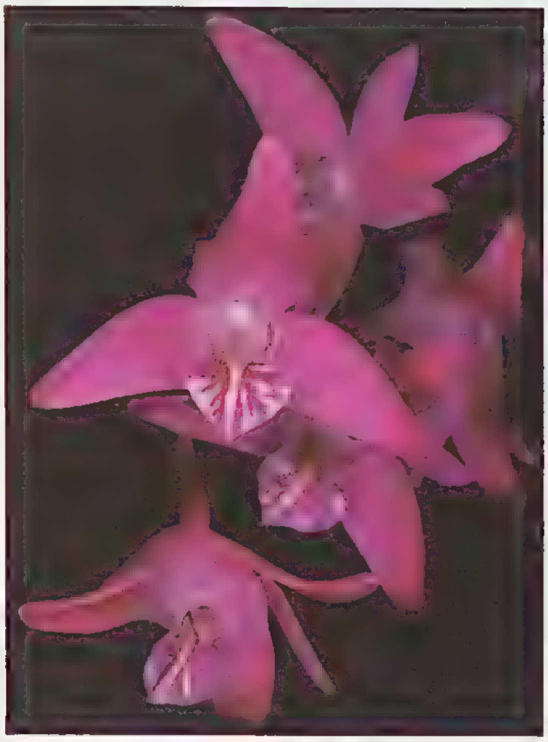


Figure 1: *Dendrobium kingianum* (actual size), a species seedling line-bred by Eric Webeck. This plant had first flowered in Winter. The Spring inflorescence seen here had been inhibited by crowding against another plant. Flower size for this clone is 38mm wide and 32mm high. Other seedlings from this cross have flowered up to 32mm across lateral sepals.

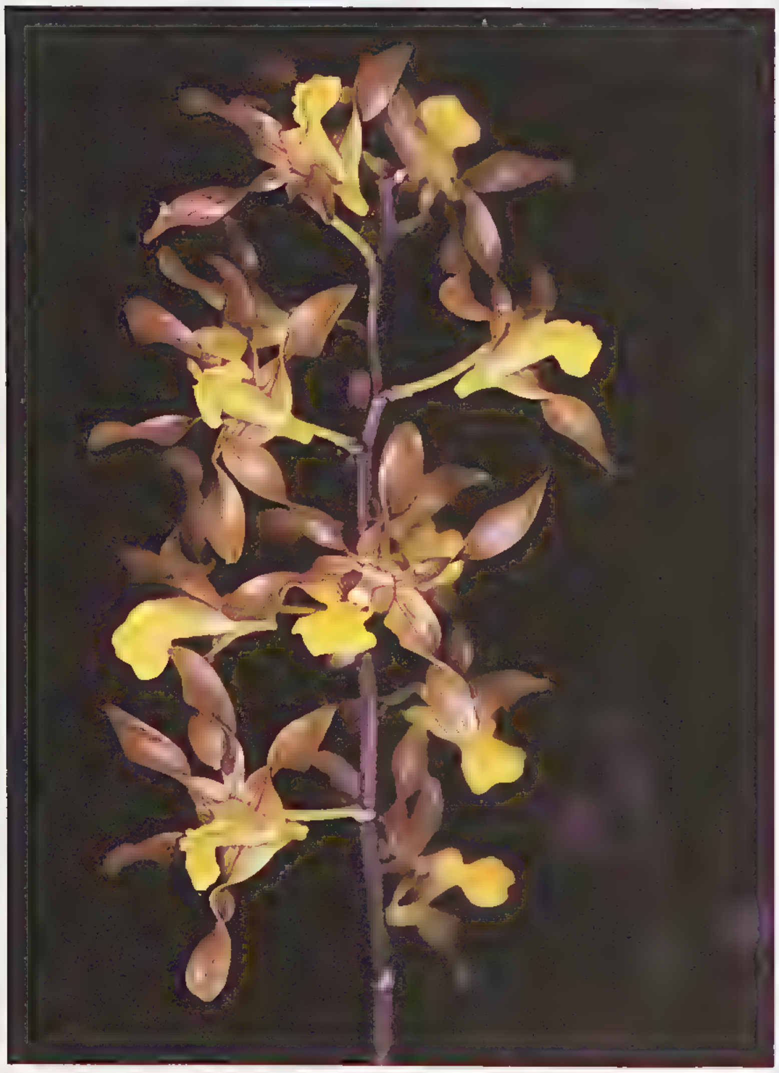


Figure 2: *D. semifuscum.* Champion Native Species owned by Michael Harrison.

The terrestrial section at the Mona Vale show has become notable in recent years for some rare, some bizarre and some beautiful ground orchids. It is pleasing to see the same plants returning year after year — proving that these plants, with a little research and thinking, may have an infinite life in cultivation. However, I still believe that 95% of collected terrestrial species are dead after 3 years in NSW.

The Hybrids. Amongst the hybrids, the best exhibits of *Dendrobium* X *gracillimum* involved many clones bred from *D. speciosum* var. *hillii* as well as the shorter stemmed forms. I believe this hybrid demonstrates the charm of the native Australian orchids: generous flowering, strong colour and vigorous growth (fig. 3).

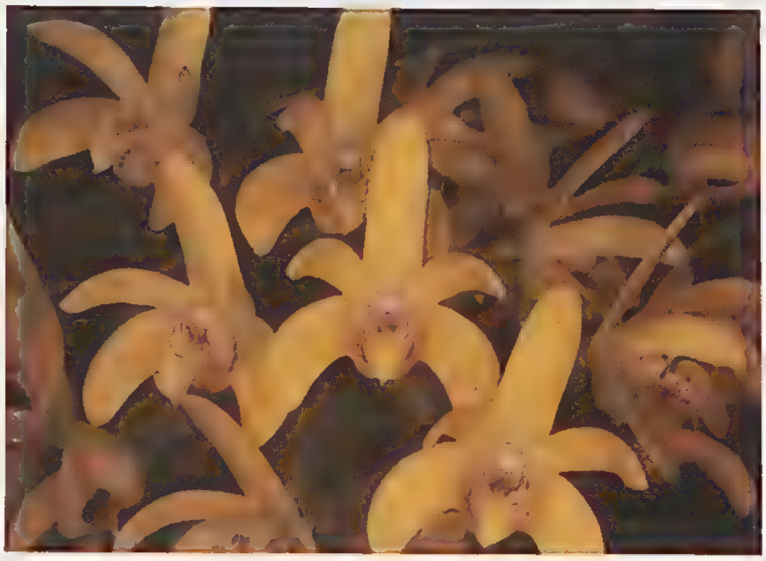


Figure 3: One of a number of exhibits in the ***D.* x *gracillimum*** section of the Show.

Considering the interest shown by the public in the various mass displays and the more floriferous hybrids at this show, one may speculate whether some of the modern hybrids being registered are fulfilling the expectations of their market.

The champion hybrid, D. Star of Gold (*D. falcorostrum* X *D. tetragonum*) was a small plant but with a good number of well coloured flowers of good size (fig. 4). The standard of the hybrid section was quite high and it was interesting to see some of the newer registrations including D. Aussie Ochre (*D. speciosum* X *agrostophyllum*) in the display of P. Spence. This new primary hybrid apparently lives up to the shape speculated upon by the editor (*The Orchadian*, Vol. 7, No. 9, September, 1983, p. 220. See fig. 5).

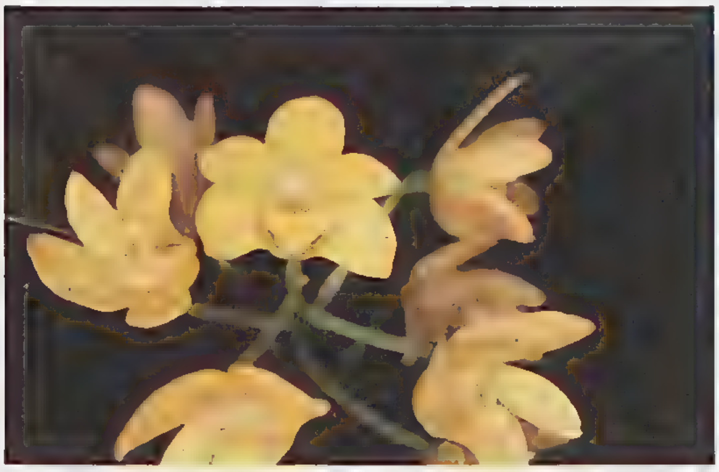


Figure 5: D. Aussie Ochre (= ***D. speciosum*** x ***D. agrostophyllum***) a recently registered new hybrid seen in the mass display by Phil Spence (near actual size).

The Displays. It is a pity that individual plants in the displays section tend to become "buried" (or lose the full impact as individuals that they would have in their own classes). For example: some very fine specimens of *D. speciosum* were to be seen in the Wollongong Group's display with its high standard of arrangement and its variety of impressive plants including the striking species, *D. smillieae*, owned by Anton van Bysterveld (fig. 6). Popular interest was obvious in such displays. Considerations of design, colour balance, flower quality, quantity and variety must have had the judges working hard to determine the best of them — a distinction that went to "Double U" Orchids (Wal and Jill Upton).

October, 1983

108 Bronte Road,
Bondi Junction, NSW 2022

ACKNOWLEDGEMENTS –

All the colour illustrations for this article were made from slide photographs taken by Garry Wells.

Colour separations have been provided for the first time in *Orchadian* by way of new production arrangements organised by Mr Aub Williams, production consultant, within our existing subscription resources.

The Editor is most grateful, on behalf of all the members of ANOS to Mr Williams for this achievement – and to donors to the *Orchadian* Colour Fund for the confidence expressed so tangibly in donations.

It is now almost certain that similar colour reproductions will be a regular two page feature of your *Orchadian*. More extensive use of colour may even be possible if the Colour Fund (now held in trust) is augmented by more donors and/or a sponsor.

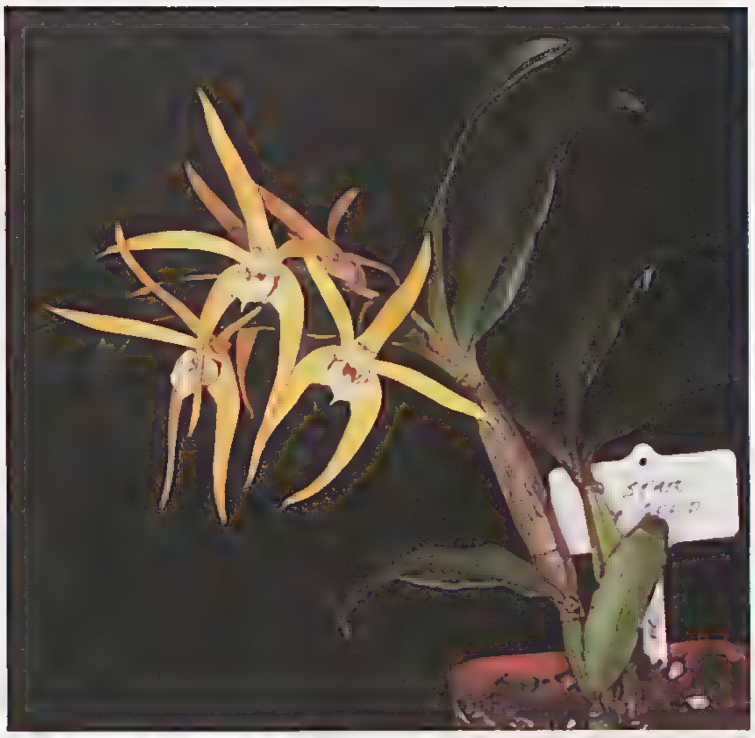


Figure 4: D. Star of Gold (= ***D. falcorostrum*** x ***D. tetragonum***). Champion Native Hybrid owned by F. and I. Chapman of the Central Coast Group of ANOS. This plant was also Champion Orchid of the Central Coast Spring Show at Gosford (a week earlier).

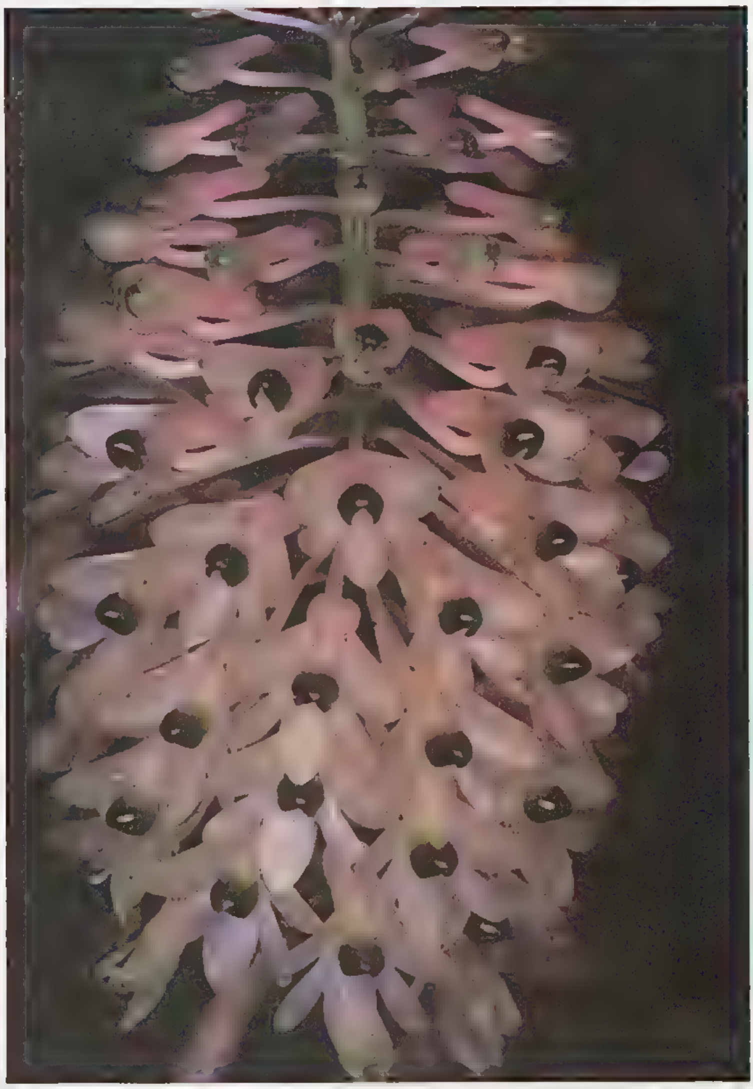


Figure 6: ***D. smillieae,*** from the display by Wollongong and District ANOS. Owner: Anton van Bysterveld.

Native Orchid Journals: New Zealand and Tasmania

The New Zealand Native Orchid Group will have completed its second year by this December. In this Group's first year it had over 100 members; and Dorothy Cooper, Editor of its *Newsletter* had produced four issues of that journal. Mrs Cooper is well known to readers of *The Orchadian* for her series of nine articles on "Native Orchids of New Zealand", published in our Volume 6 every quarter from September 1978 to September 1980. That series was produced regularly, with authoritative precision and first-class botanical drawings – even during the lengthy period while Dorothy Cooper was away in England. It is not surprising, therefore, to find that her *Newsletters*, though modest four-page roneoed issues, are always full of interest. (We publsihed an extract from the June 1983 issue in *The Orchadian*, Vol. 7, No. 9, p. 215, September, 1983).

ANOS members who specialise in terrestrial native orchids will find this *Newsletter* well worth reading. Why not get on the mailing list by joining the N.Z. Native Orchid Group? Subscription is $3.50 (N.Z.) p.a. Write to Dorothy Cooper, 14 Avalon Crescent, Lower Hutt, New Zealand.

The Bass Group of the Australasian Native Orchid Society is our newest group (first meeting in May 1983). It is Tasmania's first ANOS Group. Like the N.Z. Group, Bass Group publishes a *Newsletter* and we had received three issues by November. Again this is a roneoed publication of 4 pages but very well presented with an attractive cover-design showing as the Group's logo, the beautiful *Caladenia caudata* which is endemic to Tasmania. The Editor, Mr Grant Smith, is doing an excellent job. Along with the usual functions of keeping members informed of what is going on and what is planned within the Group, the *Newsletter* also carries information on significant developments in other States.

Judging from these early issues of such a new *Newsletter*, the Bass Group is wasting no time. Already it has mounted displays at two major shows: firstly at the 8th Tasmanian Orchid Conference Show in October – where a special award for an outstanding display went to Bass Group. It also had the "best display by an affiliated society". Bass also exhibited at the O.S. of N.W. Tasmania Spring Show in September.

As the Editor says, in his November issue: "This promises great things for Bass Group in the years ahead – a great start". For their secretary's address and meeting times please see our directory at p. 247.

– J.J.B.

AUSTRALIAN INDIGENOUS ORCHIDS

by A.W. Dockrill

This is, by far, the most essential book for students of Australian native orchids. Published in 1969, it is now out of print. We believe a revised edition is to be published in the next few years.

Meanwhile we are informed that a limited number of copies of the 1969 edition have been located by the Australian Orchid Foundation and will be sold by that organisation at a price that will benefit the AOF.

Interested readers may obtain details by contacting Mr W. Upton, 71 Wesley Street, Elanora Heights, NSW, 2101 (Tel. (02) 913 9438).

(Reprinted from ***The Orchidophile*** *– Sydney Group Bulletin, October 1983).*

SPECIES FROM HYBRIDS?

by Michael Harrison

The status of well established natural hybrids, as we currently know them, was the cornerstone of the discussion at the July meeting of the ANOS Sydney Group. Such orchids as *Dendrobium* X *gracillimum* and *D.* X *delicatum* appear capable of self perpetuation, and several members said that they know of areas where these orchids occur in considerable numbers. However, it was suggested that each occurrence of any natural hybrid, even these two "common" hybrids, results from a primary cross pollination between the parent species, and that naturally occurring hybrids do not perpetuate themselves because they have no established pollinator and, consequently, seldom produce seed.

An argument in support of this contention is that if these natural hybrids did produce viable seed on a regular basis, then they would be more common than they are. I find it difficult to accept this as a convincing explanation, for there are quite a few recognised species which, in my experience, are considerably less common than either *D.* X *gracillimum* or *D.* X *delicatum*. It also strikes me as a reasonable assumption that if a pollinator is visiting both parent species (and this must be the case where hybrids are concerned), then this pollinator would also probably be attracted to the resulting hybrid progeny, although perhaps not as strongly attracted. Both *D.* X *gracillimum* and *D.* X *delicatum* generally do occur in areas where the parent species are common, and this is to be expected. I have seen *D.* X *gracillimum* in at least six different locations between Dungog and the Queensland border. At two of these sites it was relatively common, and I do believe it is capable of perpetuating itself. Likewise, *D.* X *delicatum* probably also falls into this category, although I am very doubtful about other natural hybrids except, perhaps, *D.* X *superbiens*. Of the terrestrial orchids, it would appear that several described species may, in fact, be natural hybrids, but my lack of experience in this field limits any specific comment.

Obviously, species must guard against hybridism, for in an evolutionary sense, hybrids are regressive. As I mentioned earlier, speciation is a process of division, whereby species slowly grow apart from one another. On the other hand, hybridism, if allowed to operate freely, would act in opposition to speciation, drawing together the gene pools of different species and breaking down their individual characteristics. Isolation mechanisms generally prevent hybridisation on any significant scale, and although hybrids do occur occasionally, and are much sought after by horticulturists, genetically they are excluded from the mainstream of either parent species.

So where does that leave us with *D.* X *gracillimum* and *D.* X *delicatum*? If they are occurring regularly are they affecting the genetic integrity of the parent species? Is the situation developing along the same lines as the *D.* X *superbiens* complex, where it appears that at least one of the parent species, *D. bigibbum*, was hybridised (back-crossed) with *D.* X *superbiens*, creating such "species" as *D. bigibbum* var. *venosum*, *D. bigibbum* var. *georgei*, *D. goldiei* etc. Perhaps it is, as Ron Heberle has suggested, that the pressure of human habitation upon the pollinators is making them less specific in their attention. Perhaps there were no *D.* X *gracillimum* or *D.* X *delicatum* two hundred years ago and they have only recently appeared. I don't know, but I do enjoy thinking about it. Any comments?

Pterostylis mutica R.Br. : An Orchid with a Unique Distribution in Australia.

by R. Bates

In 1810 Robert Brown described *Pterostylis mutica* from his eastern Australian collections.(1) In 1873 Bentham recorded its distribution as from near Moreton Bay (Qld) to as far west as Mt Gambier (near the S.A./Vic. border); he did not record it from Western Australia and even in 1930 Gardner did not list it for that State. Erickson (1951) appears to have first recorded it for Western Australia when she listed it for "Kumarl & Lake King". The fact that it was the most widespread orchid in South Australia was realised as early as 1922 (Rogers). Jones & Muir in Nicholls (1969) noted that *P. mutica* had a wide distribution in Australia and New Zealand but made the surprising comment that it was "sparsely distributed" and that it was restricted in South Australia to the south-east and in Western Australia to the south-west. *P. mutica* is in fact one of the most abundant of the orchids occurring in the inland areas of southern Australia.

Examination of herbarium collections at Adelaide, Melbourne and Sydney, and recent personal collecting in all mainland States has shown that *P. mutica* is the only orchid to have a more or less continuous distribution right across the southern part of Australia. On a trip to the West in 1981 I collected it at most places where I stopped right along the Great Australian Bight and along the old shoreline curving in an arc from Eucla (on the S.A./W.A. border) to Israelite Bay. All of these collections were made from 1-15 km from the coast, indicating an almost linear distribution of some 1000 km. Recent collections have been made from the west coast of Australia near Geraldton in W.A.

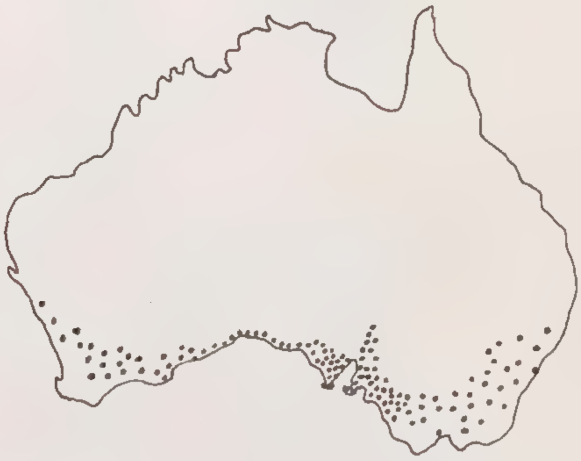
P. mutica is most common under low mallee vegetation and about rocky outcrops inland, generally in areas receiving 200-500mm mean annual rainfall. It has also been found on treeless blue-bush (*Maireana*) and saltbush (*Atriplex*) flats.

Experiments in cultivation have shown that *P. mutica* will survive, flower and set seed with as little as 50mm of rain per year if this is given as five separate waterings, each of 10mm, spread evenly over a 20 week period, with tubers at 1-2cm below the surface and the plants exposed to occasional dews. (Nature is seldom as benevolently regular in providing rains even in a 200mm rainfall area!). Other orchids have also been shown to flower on 50-100mm of water but only *P. mutica* can do it on the impoverished calcareous soils found on the southern fringe of the Nullabor. Like many other insignificant almost unattractive orchids it has taken a long time for its distribution to be correctly assessed.

Footnote: (1) There is some doubt that the species discussed here is the true *'P. mutica'* of Robert Brown as Brown would not have had an opportunity to collect in the dry inland regions.

12 September, 1983

38 Portmarnock St.,
Fairview Park, 5126
South Australia



Distribution of *Pterostylis mutica* on the Australian mainland.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the R.H.S., since February 1983 – published in the Orchid Review, *June-October, 1983)*

NAME	PARENTAGE	REGISTERED BY
DENDROBIUM		
Matilda	Dang Toi x *canaliculatum*	Mrs M. Korsman
Son of Gloucester	Peter Petersen x *speciosum*	K. A. MacPherson
Essie Banks	Hilda Poxon x *speciosum*	D. Banks
Lynette Banks	Eureka x *speciosum*	D. Banks
Aussie Bonanza	Aussie Ira x *falcorostrum*	Phil Spence Orch.
Aussie Glow	Aussie Ira x *fleckeri*	Phil Spence Orch.
Aussie Spectrum	Peter x *speciosum*	Phil Spence Orch.
Wirruna	Hilda Poxon x *fleckeri*	W.T. Upton
Ayr Queensland	*canaliculatum* x *teretifolium*	S.W. Simpson
Berry	*kingianum* x Mini Pearl	Masahiro Oda
Gold Baby	Judy Leroy x *superbiens*	N. Noble
SARCOCHILUS		
Aussie Philman	Phyllis x *hartmannii*	Phil Spence Orch.

Editorial Note: In our September issue, mention was made of Dendrobium Aussie Ochre (= *D. agrostophyllum* x *D. speciosum*) as a newly registered hybrid we should like to see. Rarely do we know what these new hybrids look like — until long after they are registered. Our hint that "we shall be looking forward to a photograph in *The Orchadian* in due course" has not passed unnoticed. Garry Wells, at the ANOS Spring Show in September, came across it in Phil Spence's display — and photographed it especially for our readers. (See Garry's review of the show in this issue). There should be more of this. We shall publish more pictures of new hybrids — provided, of course, they are not "old hat" by the time we get them, that they are worth reproducing and are accompanied by informative notes.

FRAGRANCE IN THE LIVES AND IDENTITIES OF ORCHIDS

by Ralph T. Holman*

A controversial, but generally held principle in biology states that if a substance or a structure occurs in a living organism, it must have a function. It must occur for a reason, because development of parts which do not participate in the life process are detrimental because they cost the organism energy without the profit of a function. Therefore, when biochemists detect strange and new substances, they ponder about the reasons for their occurrence and their functions.

The fragrances of flowers are understood as one means of attracting pollinators from a distance. They are chemical messages sent by the flower out into the world in search of an insect, who desires more of the attractive substance and homes in on its source. In his efforts to gather food or to enjoy the intoxicating fragrance, he manages to transport pollen from anther to stigma and from flower to flower, accomplishing a necessary step in the sexual life of the plant. In the orchids, this is often a very specific mechanism, because only certain insects can accomplish the pollen transfer of a given species of orchid because of the limits in the geometry of the flower, and because of the size, shape and behaviour of the insect. The motivation of the insect to visit the flower is the first step in the chain of activity leading to the pollination of the orchid, assuring the continuation of that species. To get his attention, the insect must be offered something he needs or wants.

Dodson and his students have observed that in one species of orchid, the pollination occurs within a short span of time in the darkness, just before dawn, during the brief period when the flower is fragrant, accomplished by one species of solitary bee. They also observed that the solitary bees perform a strange scratching of the flower and wiping of the forelegs upon their heavy porous hind legs, suggesting collection and storage of perfume oils by the bee. They made analyses of the fragrances of the bees' legs and found the odour pattern to be similar to that of the flower. That bee was known to visit three species of orchid and some bees had the odour of Orchid A, some Orchid B and some Orchid C, some A + B, some A + C, and some B + C, but none of the bees had odour of A + B + C. In the sociology of these solitary bees, once in a lifetime the males gather together in a swarm and go hunting for the solitary females. Swarming male bees had the odour of all three orchids! Thus, the collection of odour from the three orchid species had made them recognizable and attractive to each other, an essential step in their reproductive cycle.

If the odour brings a specific pollinator to the flower, it is a distinguishing characteristic of the species, acting together with geometry and timing of the flower to facilitate pollen transfer. Since the time of Linneus, botanists have been accustomed to using the structure of the flower in classifying the species, and perhaps the time has come to also apply the chemistry of the flower to the determination of relationships and identity. Analysis of floral odour also offers the advantage that the results can be expressed in quantitative terms, putting numbers on relationships.

Our objective is to use floral odour composition as the basis of quantitative chemical taxonomy of orchids, to help determine relationships when the traditional approach is inadequate. For this purpose, we developed a method of collecting floral odours which can be used in the field and which can be used by anyone without special equipment or training. We treat glass fibre paper with an odour-free grease in which floral odours dissolve. The greased paper is kept in an aluminium foil envelope which serves as the container for moderate sized orchids during the 24 hour collection of odour. The envelope is sealed, labelled and returned by mail to our laboratory where the essential oils (fragrances) are distilled and analyzed by a gas chromatograph — mass spectrometer — computer system. The many components are separated and the mass spectrum of each is measured. The computer compares the mass spectrum of each component against a library of 33,000 spectra of known substances and gives tentative identifications. The occurrence of the same compounds in the same proportions indicates identity of two fragrances (Relationship = 1). If none of the compounds of one fragrance match any one of the components of another fragrance, the relationship is zero. Intermediate values can be calculated to indicate degree of relationship.

Fragrances of a few hundred species of orchids have been analyzed, and the data are ready for evaluation and publication. In some genera, the fragrances seem to be very different from species to species; that is, the species have few components in common. In such cases, the fragrance pattern is a good identifier of the species. In other genera, the species have many components in common, indicating strong relationships among them. In some cases, fragrances have been useful in determining whether newly discovered species should be considered a species or a variety.

In my work on the native *Cypripediums*, I have noticed that the roots, stems and leaves had a distinctive odour. Recently, we investigaged the odour using the same technique described above for flowers. We found that the odour contained one major compound, and the compound was the same for *C. reginae, C. calceolus, C. acaule* and *C. candidum.* This raises the question why would roots emanate an odour — it can have nothing to do with attracting pollinators! Perhaps this is an example of a plant defense odour such as is evident in tomatoes and chrysanthemums. This is quite plausible,, for *C. reginae* and *C. calceolus* are known to produce substances which induce strong allergic reactions in some people, and the responsible compounds have been isolated and identified as larger, less volatile compounds with features in common with our defense substance.

Orchids produce a wide variety of fragrant substances. Some species produce one pattern during the day and another at night. Some turn on during the

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*Professor Ralph T. Holman is Executive Director of the Hormel Institute and Professor of Biochemistry in the University of Minnesota, U.S.A.

day and another at night. Some turn on during the night, others during the day. We are currently studying the day-night fragrances and the change in fragrance from opening of the flower until wilting. This research has been supported in the past by the American Orchid Society, but now depends on private contributions for continuation. Co-operation in the collection of fragrances from species orchids is sought, and correspondence is welcome from interested persons.

The Hormel Institute,
University of Minnesota,
801, 16th Avenue N.E.
Austin, Minnesota, 55912, U.S.A.

THE first two papers of Mark Clements's series of notes on John Lindley's orchid herbarium at Kew were received in early September. The third paper was received on 20 September 1983 and numbered 2 by Mr Clements. We have therefore taken the liberty of combining the first two papers in the series and publishing them together in this issue for December, 1983.

NOTES ON THE CONTENT OF JOHN LINDLEY'S ORCHID HERBARIUM

1 : ACIANTHUS

by M.A. Clements*

SUMMARY. This is the first in a series of papers dealing with the Australian and New Zealand species in the Lindley orchid herbarium at the Royal Botanic Gardens, Kew. General methodology used throughout these papers is given. Taxa representative of two genera are present in the *Acianthus* folder.

Introduction. John Lindley (1799-1865) has been described as the 'father' of modern orchid systematics (Reinikka, 1972). It is a title well deserved based on the fact that Lindley's book "Genera and Species of Orchidaceous Plants' (1830-1840) gave the first account of a higher classification of the orchids while being instrumental in establishing the concept of the family Orchidaceae.

The basis of Lindley's work was his own herbarium which was purchased by Kew in June 1865 (Kew Presentations & Purchases 1846-1898). It was in fact assembled from material sent to him by a large number of collectors scattered throughout the world and by exchange with other botanists. A significant number of these collections were of Australian and New Zealand plants. Since many of these taxa were described for the first time by Lindley the importance of these collections cannot be overstated and as such they are not normally loaned for study by botanists in other Institutions. The only alternative therefore for botanists studying orchids and who wish to see parts of the Lindley herbarium is to visit Kew. This has not always been possible and it would seem appropriate with the impending work for the forthcoming Orchid volume for the Flora of Australia that these data now be made available. The purpose of this and subsequent papers is to detail the Australian and New Zealand terrestrial orchid content of the Lindley herbarium.

Methods. The Lindley herbarium consists of a number of folders each containing species from one or more of the genera described in his book but that are currently considered as belonging to one genus. These folders are kept at the start of appropriate genera in the main body of the orchid herbarium at Kew. Species in each folder have been arranged in alphabetical order or in numerical order following Lindley's Genera and Species of Orchidaceous Plants. The content of these herbarium sheets varies considerably. Most contain one or more collections of a single species. In other cases there are more than two taxa on a sheet but this is relatively rare. Some sheets have descriptions of species, cut from the appropriate book or journal, pasted on them while others have prints or water-colour paintings of particular taxa on them. These paintings were done either by Lindley himself or by his artist Miss Drake. He also personally annotated each herbarium sheet.

Annotation of the specimens. For the purpose of future reference I have numbered each separate herbarium sheet in sequential order starting at number one in each genus folder. When two or more collections are found on the same sheet I have, where possible, identified these and labelled each with small letters viz. (a), (b), (c) etc. written in pencil on the sheet. Line drawings or coloured sketches and any other material, eg. prints, labels etc. on sheets have been included in the numerical sequence.

Unless otherwise indicated the data recorded here are identical to those found on the herbarium sheets. Additional comments are given under "NOTE:" or in square brackets viz. [ ]. Where necessary I have placed a determinavit label on a sheet to indicate my views on the type status of the specimen and/or nomenclature changes.

Presentation of data for each genus. The species in each genus will be treated in alphabetical order including species that were originally listed or described under different generic names but are currently considered to belong to the genus under discussion. Thus, if specimens of a species such as *Cyrtostylis reniformis* R.Br. are housed in the *Acianthus* folder because they are currently considered to belong to the latter genus (see George, 1971), then they are discussed under the currently accepted name, *Acianthus reniformis* (R.Br.) Schltr, with a note [as *Cyrtostylis reniformis* R.Br.]. Place of collection (if known) is given plus any other relevant notes, followed by date of collection (where known), the collector's name and collecting number and also the number of specimens of each collection. Notes are included where necessary but usually after the description of the complete contents of each sheet. The status of Type specimens is given.

The classification used, unless otherwise stated, follows that given by Clements (1982). Currently accepted names of taxa are in italics. Author abbreviations are not necessarily those used by Lindley, rather they conform with those given in "Draft Index of Author Abbreviations", Meikle (1980).

ACIANTHUS R.Br.

A. caudatus R.Br.

1. (a) "Shores of Port Jackson: a rare specimen in shaded ravines, June 1883", *R. Cunningham* (5 specimens).
   (b) "New South Wales, 1855", *W. Catlett* (1 specimen).
   (c) "Tasmania", *Archer* (2 specimens).
   (d) A lithograph of the taxon taken from J.D. Hooker's Fl. Tasman. (1860).

A. caudatus R.Br. var. *ater Lindley*

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* *C/- Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB.*

2. "Woolworth, Insula Van Diemen [Tasmania], Oct. 1837", *R. Gunn* 758 (4 specimens including one in packet). HOLOTYPE.

Note: In my opinion there are insufficient differences in morphology between specimens on this sheet and those of the type variety, housed at the BM, to warrant the continued recognition of this variety.

A. exsertus R.Br.

3. (a) "Circular Head, Insula Van Diemen [Tasmânia], June-July 1837", *R. Gunn* 752 (4 specimens).
   (b) "Port Jackson, N.S.W.", *A. Cunningham*. (3 specimens including one in packet with the note "mixed with *A. fornicatus*").
   (c) "New South Wales, 1855", *W. Catlett* (2 specimens).

7. (b) *Archer* (4 specimens).
   (c) A lithograph of the taxon taken from J.D. Hooker's Fl. Tasman. (1860).

Note: Both 7 (b) & (c) were on a mixed sheet with *Townsonia viridis*.

A. fornicatus R.Br.

4. (a) "Port Jackson, 1803-5", *R. Brown* (1 specimen). ISOTYPE.

Note: Type status of the species det. M.A. Clements 12/5/1983.

   (b) "Neighbourhood of Port Jackson and Parramatta, very frequent in shaded ravines", Dec. [*A. Cunningham* ?] (3 specimens).
   (c) "New South Wales, 1855", *W. Catlett* (1 specimen).

5. A tracing of a line drawing labelled "No. 1327. Port Jackson Sydney (1448)".

A. fornicatus R.Br. var. *sinclairii (J.D. Hook.) Hatch*

6. (a) "New Zealand", (12 specimens including 3 in packet).
   (b) "Raoul Island S. Pacific", "HMS Herald?" *McGillivray* (3 specimens).
   (c) "New Zealand", (1 specimen).

A. reniformis (R.Br.) var. *reniformis* [as *Cyrtostylis reniformis* R.Br.]

10. "Tasmania". (1 specimen in packet with the label "Subtribe Acianthidae. Lindl. f. V.G./*Cyrtostylis* R.Br.").

12. (a) "Port Jackson, 1803", *R. Brown* (2 specimens). ISOTYPES.
   (b) "King George Sound", [Western Australia] *Collie* (2 specimens).
   (c) "Dry rocky spots on the margins of ravines. Colony Nov.", (3 specimens).

Note: This is a *A. Cunningham* collection from the writing on the label and therefore probably from the Sydney region as were most of his other collections.

   (d) [No data on sheet] (1 specimen).
   (e) "Swan River, 1839", *Drummond* (3 specimens).
   (f) "Circular Head, Oct. 1837", *R. Gunn* 615 (5 specimens including one in packet).

13. (a) "Tasmania", *Archer* (5 specimens).
   (b) A lithograph of the taxon taken from J.D. Hooker's, Fl. Tasman. (1860).

14. A tracing of a line drawing labelled "Port Jackson No. 1328 (1447)".

15. [As *Cyrtostylis rotundifolia* J.D. Hook.] "New Zealand", (2 specimens in a packet).

16. (a) [As *Cyrtostylis oblonga* J.D. Hook.]. "New Zealand", (9 specimens including 3 in a packet).

Note: This is almost certainly part of the Edgerly collection cited in the description of the species and is therefore an isosyntype.

   (b) [As *Cyrtostylis oblonga* J.D. Hook.]. "Auckland", (1 specimen).

Note: This is probably part of the Cheeseman collection, which is also cited by J.D. Hooker and therefore is also an isosyntype.

A. reniformis (R.Br.) Schltr. var. *huegelii (Endl.) A.S. George*

9. [As Cyrtostylis huegelii Endl.].

Note: A blank sheet except for the words "Cyrtostylis huegelii Plant. Preiss." written in the top left hand corner indicating the possible acceptance of that name by Lindley.

TOWNSONIA Cheeseman

T. viridis (J.D. Hook.) Schltr. [as *Acianthus viridis* J.D. Hook.].

7. (a) "Base of Mt. Wellington, Nov. 1839 & 1840", *R. Gunn* (2 specimens). ISOTYPES.

8. [As *Acianthus oldfieldii* H.G. Reichb.]. "Mt. Wellington deep gully springs", [Tasmania] (1 specimen in a packet).

Note: There are several names written on the packet, or the label below it, all in Lindley's hand. These are *Acianthus oldfieldii, Cyrtostylis reniformis* [crossed out], and *Pterostylis? oldfieldii.* Rolfe determined the plant as *Acianthus viridis* Hook.f. There is also a brief diagnosis of the taxon written in Lindley's hand at the bottom of the sheet with the words "Columna alata" in Rolfe's hand in pencil below.

References:

Clements, M.A. (1982). 'A Preliminary Checklist of Australian Orchidaceae'. National Botanic Gardens, Canberra, Australia.

George, A.S. (1971). A Checklist of the Orchidaceae of Western Australia. *Nuytsia* 1(2): 166-196.

Meikle, R.D. (1980). Draft Index of Author Abbreviations. Royal Botanic Gardens, Kew.

Reinikka, M.A. (1972). *A History of the Orchid.* Univ. of Miami Press, Coral Gables, Florida.

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2 : *PRASOPHYLLUM*

Summary. The contents of the *Prasophyllum* folder in John Lindley's Orchid Herbarium at the Royal Botanic Gardens, Kew is described with comments on the status of some hitherto poorly understood taxa.

Introduction. This paper is perhaps one of the most significant of the series. The identity of almost all of the taxa in the genus has, at some time or other, been confused. Furthermore, the identity of some of Lindley's taxa has, until now, remained a mystery. The evidence presented here will undoubtedly lead to several changes in the classification and nomenclature of the genus as it is presently understood (Clements, 1982).

Methods. The methods used are the same as those described above. (Clements, 1983b).

Acknowledgements. These studies were financially supported by the Sainsbury Trust through the Bentham Moxon Trust at Kew. I wish to thank the Director of the Royal Botanic Gardens, Kew and the Keeper of the Herbarium for permission to use the facilities at Kew, and, in particular, Phillip Cribb and Peter Taylor who have read and commented on this manuscript.

PRASOPHYLLUM R.Br.

P. alpinum R.Br.

2. (b) "Tasmania", *Archer* (3 specimens).
   (c) A lithograph of this species taken from J.D. Hooker's, Fl. Tasman. (1860) correctly annotated by Lindley.

3. (b) "Insula Van Diemen, 1837", *R. Gunn* 929 (3 specimens including part of an inflorescence in a packet plus a drawing of the column and a lip).

Note: Above the annotation on the sheet is pasted a label on which is written "Prasoph. alpinum JDH Flora of Tasm. II. 371" in Lindley's hand.

P. archeri J.D. Hook

4. (a) "Tasmania", *Archer* (2 specimens). ISOTYPE.

Note: Type status of the species determined by D.F. Blaxell 10/1/1975.

(b) Lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860).

(c) Watercolour painting of a *P. archeri* flower and its dissected parts including the pollinia, has been pasted over the base of one of the 2 specimens on the sheet.

P. australe R.Br.

19. (As *P. lutescens*) "Tasmania", *Archer* (7 specimens).

Note: Written on the sheet above Lindley's annotation is Rolfe's determination of the species, i.e. *P. australe.*

26. (a) (As *P. lutescens* Lindley) "Rocky Cape, Dec. 1837", *R. Gunn* 922 (3 specimens). LECTOTYPE.

Note: Lectotype of *P. lutescens* chosen by D.F. Blaxell 10/1/1975. There is no doubt about the identity of this species being *P. australe* R.Br.

(b) Lithograph of *P. australe* from J.D. Hooker's, Fl. Tasman. (1860).

P. brevilabre (Lindley) J.D. Hook.

7. (a) (As *P. lutescens β brevilabre*) "Rocky Cape, Insula Van Diemen, Dec. 1837". *R. Gunn* 923 (5 specimens plus drawing of a flower, lip and column). LECTOTYPE.

Note: The lectotype selected by D.F. Blaxell 10/1/1975 has been marked by him as specimen 'a'.

(b) A lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860) labelled "P. brevilabre JDH" in Lindley's hand.

20. (c) (As *P. lutescens*) "Rocky Cape, Insula Van Diemen, Dec. 1837", *R. Gunn* 922 (1 specimen).

Note: This single specimen is on the same sheet as the holotype (lectotype) of *P. lutescens* Lindley with the note next to it in pencil "923. Note the bracts". From this it is clear that it is part of the *Gunn* 923 and not his 922 collection.

P. brachystachyum Lindley

6. "Rocky Cape and Circular Head, Insula Van Diemen, Dec. to Feb. 1837", *R. Gunn* 930 (3 specimens including a bud in a packet plus a drawing of a dissected flower). LECTOTYPE & SYNTYPE.

Note: Lectotype chosen by D.F. Blaxell 10/1/1975 and marked 'a'. Written on the sheet in pencil above Lindley's original annotation are the words *"Genoplesium Baueri* Br.?" presumably because he had some doubt about the identity of his species subsequent to his description of it. The type is representative of the species found throughout much of coastal S.E. Australia including Tasmania and commonly referred to as *P. rufum* R.Br. It remains to be seen if these two are conspecific.

P. brainei R. Rogers

2. (a) (As *P. alpinum* R.Br.) "Circular Head, Insula Van Diemen, Nov. 1837", *R. Gunn* 929 (4 specimens plus a single flower in a packet and coloured drawings of a column wing, column and lip both front and side views).

Note: Additional information "sweet scented like a hyacinth" is written on the label in Lindley's hand.

3. (c) (As *P. alpinum*) "Circular Head, Nov. 1837", *R. Gunn* 353 (2 specimens).

P. colensoi J.D. Hook.

8. (a) *Colenso* 2404 (2 specimens that have been very badly chewed by herbarium beetle plus the apex of an inflorescence in a packet, which is in much better condition.

(b) [No date] (3 specimens).

Note: *P. colensoi* is currently recognised as a New Zealand endemic but these plants, which are probably part of the type material used by Hooker, bear a remarkable similarity to *P. alpinum* R.Br. Further investigation may show these two to be conspecific.

P. despectans J.D. Hook.

9. (a & b) "Tasmania", *Archer* (2 specimens plus a drawing of the flower). ISOSYNTYPE.

Note: type status of this collection determined by D.F. Blaxell 10/1/1975.

(d) A lithograph taken from J.D. Hooker's, Fl. Tasman. (1860).

P. elatum R.Br.

5. (As *P. australe* R.Br.) "Rocky Cape, Insula Van Diemen, Dec. 1837", *R. Gunn* 921 (4 partly chewed specimens and some flower fragments in a packet plus a drawing of the lip and column).

Note: Rolfe, one time curator of the Kew orchid herbarium, has written in pencil on the sheet "P. elatum".

10. (a) *Sieber* 167 (1 chewed specimen plus a flower in a packet).

(b) "Swan River 1889", *Drummond* (1 specimen, badly chewed by herbarium beetle).

(c) "Swan River", *J. Mangles* (1 specimen).

P. fimbriatum R.Br.

12. "Port Jackson, N.S. Wales, barren heaths on the shores; flowering in May 1833", *R. Cunningham* 8 (3 specimens, one in seed two in flower, plus a single flower in a packet).

P. flavum R.Br.

13. (a) "Tasmania", *Archer* (3 specimens).

(b) Lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860).

P. frenchii F. Muell.

14. (a) (As *P. fuscum* R.Br.) "Gawler Town; Pine forest [South Australia], Nov." *Behr* (1 specimen).

Note: The original annotation was on a printed label bearing the following "Plantae Mullerianae – Nov. Holland. meridiurnal" in Mueller's hand.

(b) (As *P. fuscum* R.Br.) "Boston Point, Nov. Holland Austr." *W. Sonder* (1 specimen).

Note: Part of the Mueller collection sent to Kew.

P. fuscum R.Br.

1. (As *P. affine* Lindley) [Collection details are absent from this sheet] (3 specimens plus a drawing of a lip and column). HOLOTYPE.

Note: This species is, in my opinion, identical to *P. fuscum* R.Br., the type of which I have seen at the British Museum. Brown's material came from damp ground near the Georges River, Port Jackson, while Lindley states his material probably came from the south coast. There is a R. Brown collection in the BM with the manuscript name *P. affine* written on it in pencil. It is possible that Lindley's specimens are part of that Brown collection but this remains to be substantiated.

40. (a) (As *Prasophyllum* sp.) "New South Wales, 1855", *W. Catlett* 212 (3 specimens including one in a packet).

P. gibbosum R.Br.

15. (a) "K.G. Sound" [King George Sound, Albany, Western Australia], *Collie* (1 specimen).

Note: Rolfe pencilled in the name *"P. cucullatum* Reichb f." below the specimen but this is a later name for the species.

(b) "King Georges Sound", *Hooker* [?] (3 specimens including the top of one inflorescence in a packet).

16. A tracing of a line drawing of the species labelled "No. III, K.G. III Sound (759)".

17. "Swan R." [Swan River, Perth, Western Australia], *Drummond* 443 (3 specimens including one in a packet).

Note: Rolfe has written "*P. cucullatum* Reichb.f." in pencil below the specimens.

Note: Determined as *P. gibbosum* R.Br. by A.S. George 25/10/1968.

P. giganteum Lindley

18. "Swan River, 1839" *Drummond* (2 specimens both badly chewed by herbarium beetle plus a drawing of the lip). LECTOTYPE.

Note: The lectotype was chosen by D.F. Blaxell 10/1/1975 who has marked the specimen 'a'. This species is, in my opinion, identical with that described at a later date as *P. grimwadeanum* Nicholls.

P. hians H.G. Reichb.

21. (b, c & d) (As *P. ovale* Lindley) "Swan River, 1839", *Drummond (3 specimens).*

Note: Determined as this taxon by A.S. George 13/12/1967.

P. macrostachyum R.Br.

3. (a) (As *P. alpinum* R.Br.) "Swan River, 1839", *Drummond* (3 specimens plus a drawing of a flower and column wing).

Note: Written in pencil under the drawing are the following: "probably a distinct species". *"P. gracile"* and *"P. macrostachyum"*.

Note: Determined 9/2/1983 by M.A. Clements as *P. macrostachyum* R.Br. var. *ringens* (H.G. Reich.) A.S. George.

22. (As *P. gracile* Lindley) "Swan River, 1839", *Drummond* (2 specimens plus 2 flowers in packet and a drawing of the lip and column wing). HOLOTYPE.

Note: Determined as *P. macrostachyum* R.Br. var. *macrostachyum* by A.S. George 25/10/1967.

P. macrotys Lindley

24. "Swan River, 1839", *Drummond* (2 specimens). LECTOTYPE.

Note: Lectotype chosen by D.F. Blaxell 1/1975 and labelled by him as specimen (a). Although listed by A.S. George as a synonym of *P. elatum* R.Br. (George, 1971) it can be distinguished readily from that species by the nature and shape of the calli on the lip and the habit of the flowers and it is therefore probable that *P. macrotys* should be recognised as a good species.

P. nudum J.D. Hook.

25. (a) "Tasmania", *Archer* (2 specimens).
    (b) "Tasmania", *Archer* (4 specimens).

Note: Rolfe wrote *"rufum* R.Br." in pencil under these specimens.

    (c) (As *Microtis?* sp. nov.) "New Zealand" *Colenso* 1021 (1 specimen). ISOTYPE.
    (d) A lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860).

Note: The specimens on this sheet are representative in my opinion of the species currently known as *P. beaugleholei* Nicholls.

26. "Tasmania, Dupe" [Duplicate specimen from another collection of unknown source?] (1 specimen in a packet).

Note: Below the packet there is a label with the following *"Prasophyllum* Br., Genoplesium Br." written in pencil.

P. ovale Lindley

21. (a) "Swan River, 1839", *Drummond* (1 specimen with 2 flowers removed, both of which are in a packet on the sheet plus a drawing of a lip and a side lobe of the column). LECTOTYPE.

Note: Type status of the specimen determined by A.S. George 13/12/1969.

P. parvifolium Lindley

21. (a) "Cape Lewis" [Western Australia], *Collie* (1 specimen plus a flower in a packet).
    (b) "Swan River, 1839", *Drummond* (1 specimen). HOLOTYPE.

Note: The type status of the species was determined by D.F. Blaxell 10/1/1975.

P. patens R.Br.

30. (a) "Tasmania", *Archer* (4 specimens).
    (b) A lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860).

37. (a) (As *P. truncatum* Lindley) "Tasmania", *Archer* (6 specimens).

Note: Lindley wrote the words *"P. truncatum crispum"* under the collector's name and locality. Although he considered that these plants belonged to his species *P. truncatum* they are, in my opinion, better placed with *P. patens* because of their pointed divergent lateral sepals and sharply reflexed lip.

P. pumilum J.D. Hook.

31. "New Zealand" [Northern Island], Edgerly (2 specimens). ISOTYPE.

Note: This collection is clearly part of the type as both were cut from one original herbarium sheet, the remainder of which is the holotype and, also housed at Kew. *P. pumilum* is, in my opinion, conspecific with a number of Australian taxa including *P. viride* Fitzg., *P. auro-viride* Rupp. etc. and as such will undoubtedly be taken up in the future as this is the oldest validly published name for the species involved.

P. regium R. Rogers

11. (As *P. elatum* R.Br.) A tracing of a line drawing of the species labelled "K.G. Sound No. 1282 (758)".

Note: This tracing is certainly of *P. regium.* It does not agree at all with the type specimen of *P. elatum* R.Br. in the BM, and it must be assumed that this species was misidentified by Lindley when he incorporated it into his herbarium.

P. rostratum Lindley

23. (a) (As *P. nigricans* R.Br.) Bugle range Nov. Holl. austr. [South Australia] 1848", *W. Sonder* (1 specimen).

Note: Part of the Mueller collection sent to Kew. There is a note on the label in Mueller's hand "Diagnosi exacti respondit flores virides ut labellum antherae apice fuscae". signed "F. Mull. in litt."

    (b) (As *P. nigricans* R.Br.) "Van Diemensland" *C. Stuart* (1 specimen).

Note: On a printed label "Plantae Mullerianae".

32. "Van Diemen's Land", *Gunn* 353 (2 specimens plus a drawing of lip on column wing). HOLOTYPE.

Note: Although both specimens have been badly chewed in the past by herbarium beetle there is still sufficient material left for a proper diagnosis of the species. These plants, in my opinion, agree well with the species known in most of the literature as *P. gracile* R. Rogers (nom. illeg.) and, more recently, listed by Clements (1982) as *P. frenchii* F. Muell.

33. (a) "Tasmania", *Archer* (5 specimens).
    (b) A lithograph of the species taken from J.D. Hooker's, Fl. Tasman. (1860).

Note: Lindley wrote *'fuscum* Br.' in pencil under his earlier annotation of this lithograph, presumably as the plate was published under the latter name.

39. "Nangus" *McArthur* 160 (1 specimen plus 3 flowers in a packet).

Note: Not named by Lindley.

P. rufum R.Br.

9. (c) (As *P. despectans* J.D. Hook.) "South Australia; orchid from the Black Forest" *Prentice* (1 specimen).

Note: The ink on the label has spread making it very difficult to decipher correctly.

P. striatum R.br.

34. A tracing of a line drawing labelled "Port Jackson (756)".

35. (a) "Port Jackson, barren shores of; April & May" [R. Cunningham?] (3 specimens).
    (b) "New South Wales, 1855", *W. Catlett* (2 specimens).
    (c) "Port Jackson, 1803", *R. Brown* (2 specimens but one with the flowers eaten by herbarium beetle). ISOTYPE.

Note: Type status determined by D.F. Blaxell 1/1975.

P. suttonii R. Rogers et R. Rees

28. (As *P. patens* R.Br.) "Insula Van Dieman, 1837", *R. Gunn* 927 (4 specimens including an inflorescence

in a packet, plus a line drawing of column and lip with the words "to be reexam.? sp. cohorentia non connata carnosa. inf. minor" written below in pencil).

Note: The connate lateral sepals, broad lip with crenulate margins, slightly dilated petals and compact inflorescence that arises near the top of the leaf are quite characteristic of *P. suttonii* rather than of *P. patens*.

P. truncata Lindley

29. (a) (As *P. patens* R.Br.) "Woolworth., Insula Van Diemen, Nov. 1837", *R. Gunn* (1 specimen plus a line drawing of the column and lip).
    (b) (As *P. patens* R.Br.) "Sandhills Circular Head, Insula Van Diemen, Dec. 1837", *R. Gunn* 926 (3 specimens plus a line drawing of lip and column).
    (c) [No collection data] (1 specimen plus a line drawing of the lip).

Note: On the bottom left hand corner of the sheet are written the words "New Holland Miller" in Lindley's hand. Lindley (1840) cites *Gunn* 926 as belonging to *P. patens* but specimens 29. a-c) all clearly belong to his *P. truncatum* which has a more compact raceme, shorter segments, slightly dilated petals and a lip that is less sharply reflexed than that of *P. patens*.

36. (a) "Marshes, Circular Head, Insula Van Diemen. Dec. 1837", *R. Gunn* 924 (3 specimens plus a drawing of a lip, column and callous apex). LECTOTYPE.

Note: This is the variety described by Lindley (1840) with the words "Labellum white" which is written on the label in Lindley's hand. Chosen as the lectotype by D.F. Blaxell 10/1/1975 and marked by him as specimen (a).

    (b) "Rocky Cape, Insula Van Diemen. Dec. 1837", *R. Gunn* 920 (2 specimens one of which is in early fruit). SYNTYPE.

Note: This is the collection identified as variety β by Lindley (1840). He also wrote "labellum green" on the label. The specimens although slightly larger do not, in my opinion, differ significantly in floral morphology from others on the sheet.

    (c) "Circular Head, Insula Van Diemen. Nov. 1837", *R. Gunn* 925 (2 specimens). SYNTYPE.

Note: Lindley wrote "Labellum white" on the label. This is the second collection cited by Lindley under the variety α. The species, as described by Lindley, has been recognised by Curtis (1979) as a coastal or swamp-loving form of the much more widely distributed species *P. patens*. In my opinion, the two taxa are morphologically distinct and unless evidence is presented to the contrary they should be recognised as distinct species.

40. (b) (As *Prasophyllum*) "Nangus" MacArthur 161 (1 specimen plus 3 flowers in a packet.).

P. tunicatum J.D. Hook.

38. "New Zealand [North Island, East Coast]" *Colenso* 84 (2 specimens). ISOTYPE.

Note: This collection is part of the type, cut from the original herbarium sheet and pasted onto another sheet by Lindley. The interesting thing about this collection and that of the holotype of *P. tunicatum* is that they were once on the same sheet as 2 specimens of Hooker's species, *P. pumilum*. I have examined all these specimens and, in my opinion, they represent a single taxon. *P. tunicatum* is not, however, conspecific with *P. nudum* J.D. Hook. as stated by Moore & Edgar (1970) because the former lacks any cilia on the lip or column wings, these being characteristic of *P. nudum*.

References:

Clements, M.A. (1982) 'Preliminary Checklist of Australian Orchidaceae'. National Botanic Gardens, Canberra, Australia.

— (1983, b). Notes on the content of John Lindley's orchid herbarium – 1: Acianthus. *Orchadian* (in press).

Curtis, W.M. (1979). 'The Student's Flora of Tasmania. Part 4a Angiospermae: Orchidaceae'. J.J. Hughes. Govt. Printer. Hobart, Tasmania.

Lindley, J. (1830-1840). 'The Genera and Species of Orchidaceous Plants'. Ridgways, London, England.

Moore, L.B. & Edgar, E. (1970). 'Flora of New Zealand Vol. II', A.R. Shearer, Govt. Printer, Wellington, New Zealand.

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A.N.O.S. 21st ANNIVERSARY, 1984

July 1984 is the 21st Birthday of the founding of the Australasian Native Orchid Society and it is intended to hold an Australian Native Orchid Workshop on Saturday, 7th and Sunday, 8th July 1984 with a buffet dinner being held on Saturday, 7th.

The workshop will be held at the Uniting Church Conference Centre "Naamaroo" situated in 7 hectares of natural bushland adjacent to the Lane Cove River National Park, Sydney.

Naamaroo provides on-site accommodation in cabins, six for sixteen persons and six for twelve persons. All are divided into four "roomettes" and fully carpeted. The Centre is fully catered for with attractive meals of high standard and morning and afternoon teas and suppers are provided.

The guest speakers will cover a wide range of subjects of interest to all growers of native orchids and their hybrids. The speakers include Mr A. George, Mr L. Lawler, Mr R. Gifford, Dr B. Wallace, Mr D. Cannon, Mr M. Corrigan, Mr D. Blaxell, Dr D. McAplpine, Mr L. Jarvis, Dr N. Grundon, and a speaker from the National Parks and Wildlife Service.

The workshop will be limited to 150 registrants and the cost will be $50.00 each which includes all meals, morning and afternoon teas, buffet dinner and a copy of the proceedings. If accommodation is required the cost will be $60.00 inclusive of all the above.

Members interested in attending the workshop are invited to write to the Secretary, ANOS, Box C106, P.O. Clarence Street, Sydney, N.S.W. 2000.

ANOS PRESIDENT'S REPORT TO AGM, 1983

Ladies and Gentlemen,

Welcome to the 1983 Annual General Meeting. The most important event in the last year was the Delegates meeting held in November at the Ryde School of Horticulture. Members representing 9 groups and affiliated native orchid societies attended this day-long meeting. A wide range of topics were covered ranging from membership, structure of Groups, affiliated native orchid societies and the Orchadian. From this meeting came the recommendation for the proposed amendments to the Constitution.

The Ira Butler Award for Australian native orchid hybrids is now firmly established and Council wishes to congratulate winners of this prestigious award and wish members good luck in forthcoming shows.

Council still has not received the complete results of the survey carried out on members early in 1982. When received members will be informed through the Orchadian.

A worry for the future is rising costs. Members are aware there is an increase in postal charges due in October and other charges are sure to increase. As I personally dislike increasing fees any further, the only solution is to increase the membership of A.N.O.S. I strongly urge Groups and individuals to endeavour to enrol new members for A.N.O.S.

1984 will see the 21st anniversary of the founding of A.N.O.S. and to celebrate this event a workshop and buffet dinner will be held on the weekend of Saturday 7th and Sunday 8th July. The location chosen is the Uniting Church Conference Centre "NAAMAROO" which is adjacent to the Lane Cove National Park. Accommodation and meals will be provided at the centre.

There will be at least 12 speakers presenting papers covering a wide range of topics. The workshop will be limited to an attendance of 150, so keep this weekend free and help us celebrate the 21st birthday.

Full details of costs and speakers will be circulated in the December Orchadian together with booking arrangements.

Norman Hilliger
President

LETTERS TO THE EDITOR

Dear Sir,

Dendrobium tetragonum : The pale form in north Queensland

I read with interest Michael Harrison's article "Cultivation Based On Habitat Observation VII — *Dendrobium tetragonum*".

I am afraid I cannot agree with his assertion that the pale form of *Dendrobium tetragonum* found in North Queensland is var. *giganteum*. The criterion for describing this variety was its tomentose labellum. This variety, while generally larger in size than var. *tetragonum*, has a distinctive labellum with flared side-lobes and the midlobe generally is not turned under to any degree.

I have at this time a number of the lighter variety of *D. tetragonum* collected from sites from the Windsor Tableland in the north to Ravenshoe in the south. Those in flower I have compared with var. *giganteum* collected from Iron Range, McIlwraith Range, Daintree River, Innisfail and Tully River. The results of this comparison lead me to believe that the pale form of this species is not var. *gigateum* but is more closely related to var. *tetragonum*. There was a complete absence of hair on the labellum and ridges; the side lobes of the labellum do not flare outwards but recurve to tightly enclose the column. The flower, while achieving similar size dimensions to var. *giganteum* has much finer sepals and petals and a labellum less than half that of var. *giganteum*.

While this variety is predominately of yellow or green sepal and petal colour with a white labellum some individuals do have small spots on the margins or have red margins on the sepals.

The leaves differ from those of the coastal and far northern plants known locally as var. *giganteum* as they tend to be a darker green and are usually finer and more lanceolate.

Under cultivation this form grows as well as var. *giganteum* and does not seem intolerant of high temperatures as I grow both forms on cork in my Phalaenopsis house. This species requires frequent watering on cork but the root growth more than repays the additional care.

Yours faithfully,
David Liddle
P.O. Box 794
Mareeba, 4880

19 September, 1983

Dear Sir,

The Letter to the Editor from P. King of Coffs Harbour (Sept *Orchadian*, p. 222) in response to my article 'Where Do They Come From?' (June *Orchadian*, p. 193) has prompted me to consider if perhaps I should have included people like (Mr?) King under that same title. Mr King's list of grievances is so lengthy that I am forced to deal with only a few of them.

Firstly, Mr King complains that I have not "done my homework" with regard to the hosts on which *D. falcorostrum* occurs. I have been told by a botanist of a location where this orchid grows on rocks and I too have seen it on Coachwood trees. As well, I have seen it on the trunks of tree ferns, so because Mr King insists on nit-picking, I suggest that he should do *his* homework.

Secondly, Mr King asks why I did not send my article to the National Parks and Wildlife Service. I didn't need to. The N.P.W.S. requested a meeting with me to discuss the article and, as a result of that meeting (in which they supported my views), ANOS Council is now being consulted by the N.P.W.S., via a series of meetings, for the purpose of obtaining creditable advice for the formulation of new native orchid protection legislation. It is certain that the attitude of the N.P.W.S. is vastly broader than that of Mr King.

Thirdly, why did I not send my article to newspapers? I happen to work for a large newspaper group in Sydney and a leading journalist has read my views and expressed interest in the subject. He is keenly awaiting the results of future meetings with the N.P.W.S.

Mr King also states: "If you can't mention the persons' names, stop the mud-slinging because I know the persons you are stomach-paining about". No doubt he does. I name no persons in my articles because I choose not to. I choose not to because Mr King's associates may be only too willing to see ANOS or myself in Court. They, of course, would have their 'legal protection weapon' as camouflage. I find it puzzling that Mr King does not object to what I have written — only *that* I have written.

And what can I say concerning Mr King's accusations that I "spend a lot of time sneaking around the North Coast finding out other people's business"? Indeed I do, Mr King; and it won't be long before I visit Coffs Harbour — *incognito* of course.

Finally I must say that Mr King's letter is the product of a quick pen rather than a quick mind, unfortunately. Perhaps he will be gracious enough to put his pen to paper (with less haste this time) and fully present his views on the subject of Native Orchid protection.

Yours faithfully,

G.F. Walsh,
55 Pembroke St.,
Cambridge Park 2750

14 September, 1983

Who's Who

A Directory to the Australasian Native Society —Its Officers and Group Contacts

ANOS Executive Council (Address as shown on Editorial page)

President: N. Hilliger; **Vice President:** P. Leithhead; **Secretary:** M. Harrison; **Treasurer:** Margaret Spence; **Editor:** J. Betts
Councillors: R. Gifford, Sue Herd, G. Hillman, L. Jarvis, M. Penberthy.

ANOS Groups and Affiliated Native Orchid Societies.

NEW SOUTH WALES

- **Port Hacking Group:** Tel. (02) 524 9996 c/- Sec. 12 Laguna St. Caringbah 2229. Meets 8 p.m. 4th Tuesday at Community Hall, Gymea Bay Road, Gymea.
- **Sydney Group.** Tel. (02) 53 5956 c/- Sec. Lot 2, Howes Road, via Wilberforce 2756. Meets 8 p.m. 3rd Friday each month, Ryde School of Horticulture, 59 Parkes Street, West Ryde.
- **Warringah Group.** Tel. (02) 99 2468 c/- Sec. P.O. Box 524, Dee Why, 2099.
Meets 8 p.m. 2nd Thursday at the Thomas Vickers Memorial Hall, Cnr Pitt and Grainger Roads, North Curl Curl.
- **Wollongong and District Group.** Tel. (042) 71 5350 c/- Sec. 19 London Street, Berkeley 2506.
Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- **Central Coast Group.** Tel. (043) 88 1785 c/- Sec. 158 Geoffrey Rd., Chittaway Point, 2259. Meets 8 p.m. 2nd Wednesday at the Baptist Church Hall, cnr York and Frederick Streets, East Gosford.
- **Newcastle Group.** Tel. (049) 59 2734 c/- Sec. 4 Pemell Street, Toronto, 2283.
Meets 4th Wednesday at the John Young Community Centre, Thomas Street, Cardiff.
- **Hastings Valley Group.** Tel. (065) 85 6150.
Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Hastings Street, Wauchope.
- **Far North Coast Group.** Tel. (066) 24 1023 c/- Sec. 14 Fischer Street, Goonellabah 2480.
Meets 8 p.m. 1st Thursday at Ballina High School, Burnett Street, Ballina.

VICTORIA

- **Victorian Group.** Tel. (03) 551 3307 c/- Sec. 17 Leonard Close, South Clayton 3619.
Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- **Darling Downs Group.** Tel. (076) 35 8627 c/- Sec. P.O. Box 5141 G.P.O. Toowoomba 4350.
Meets 7.30 p.m. 3rd Friday at the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- **Native Orchid Society of Queensland** (Affiliated) Tel. (07) 378 2881 c/- Sec. P.O. Box 159, Broadway, 4000.
Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

SOUTH AUSTRALIA

- **Native Orchid Society of South Australia** (Affiliated) Tel. (08) 293 2471 or 297 3724 c/- Sec 1 Halmon Avenue, Everard Park, 5035.
Meets 4th Tuesday, St. Matthew's Hall, 67 Bridge Street, Kensington.

WESTERN AUSTRALIA

- **W.A. Native Orchid Study and Conservation Group** (Inc.) (Affiliated) Tel. (09) 401 9195 C/- Sec. P.O. Box 323, Victoria Park 6100
Meets 3rd Wednesday at the Dep. of Agriculture's Film Room, Jarrah Road, Bentley.

TASMANIA

- **Bass Group.** c/- Mrs Gwen Smith, R.D. 793, Kindred, Tas. 7310.
Meets last Thursday each 2nd month at Ulverstone High School.

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A CHECKLIST OF AUSTRALIAN NATIVE ORCHID HYBRIDS

Second Edition — September 1981

This revised edition is now available from the Secretary, ANOS, P.O. Box C106, Clarence St., Sydney. N.S.W. 2000 at $1.50 per copy (postage included).

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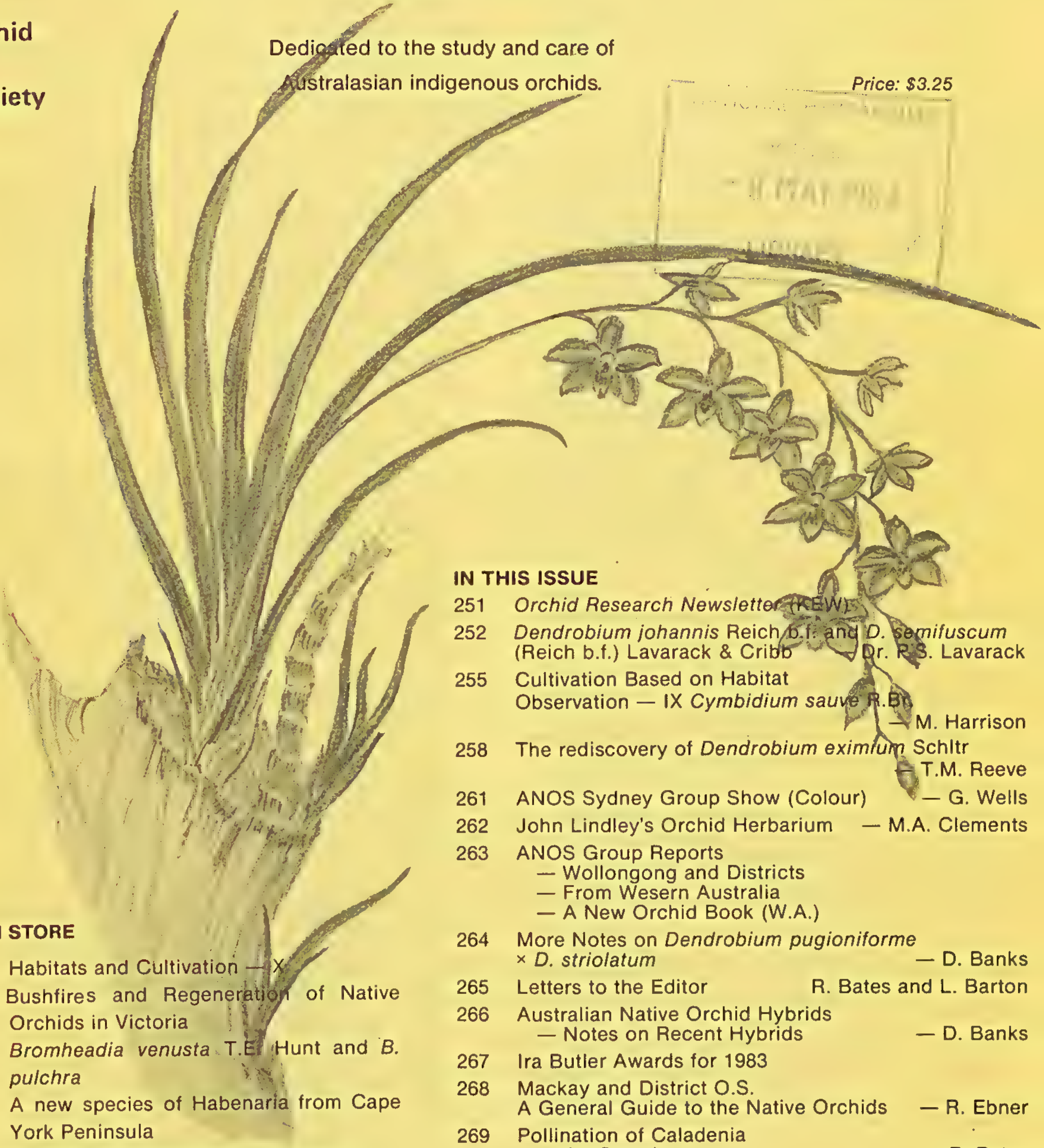

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On all editorial and advertising matters, announcements by Groups, Affiliates, etc. please write to: J.J. Betts, 33 Memorial Avenue, St. Ives, N.S.W. 2075.

Articles should be typed in duplicate preferably on A4 size paper; double spaced with 4cm or more left hand margins.

EDITORIAL

Our venture into colour, from last December, has brought much favourable comment. We hope there will be a consequent rise in the number of subscribers — a hope that will be more readily realised if present subscribers show their copies to friends who have not seen the journal in recent years or who are so new to the world of native orchids that they have not yet heard of *The Orchadian.*

I have a few important messages from A.N.O.S. Council which I hope subscribers will note carefully.

First: with this issue subscription notices for the coming year (1984-5) have been sent out 3 months earlier than before. In the past subscriptions received as late as December have not incurred removal of the subscribers from the mainling list — so that, in a number of cases, members who have ceased subscribing have received the September issue free. This will no longer be possible as Council intends to remove "non-financial" subscribers from the mailing list **before** the September issue goes out. Hence we send you the subscription notice with the March issue to ensure plenty of time to act upon it. But, to be on the safe side, do it **NOW.**

Council would also like all Group and Affiliate Secretaries to let us have their Spring Show dates in time for publication in the June issue — i.e. to reach the editor **no later** than May 20th.

Finally: the consolidated INDEX to VOL'S 1—5 of *The Orchadian* is now at the proof-reading stage and we expect it to be published by July, 1984. Please remember that we shall print only a limited number of copies — based on orders received before printing starts.

The Late Len Archer

Mr Len Archer, a foundation member of A.N.O.S., passed away on 6th February, 1984. His contributions to our knowledge of native orchids were many. I am indebted to our founding President, Bill Murdoch, and to Dr Ben Wallace of the National Herbarium of N.S.W. for the following notes *in memoriam.*

When A.N.O.S. was being formed in 1963 Len Archer keenly supported the project. He was at that time a resident of Coffs Harbour where his job as a telephone lineman necessitated long journeys on foot through wild rainforest areas; so his acquisition of native orchid plants became something of a legend among orchid enthusiasts — both botanists and amateurs. Bill Murdoch and others visited him often, making trips into the forests in search of rare plants. Over the years Len Archer collected an enormous range of *Dendrobium kingianum* forms.

In more recent years, in his retirement to the Gosford area, Len Archer maintained his large collection and donated many plants to the Royal Botanic Gardens, Sydney and many pressed specimens to the herbarium of the Botany Department of the University of New England at Armidale.

Our Society expresses its sincere sympathy to Len Archer's widow and family in their loss.

FEEDBACK AND FOLLOW-UP

- **Index to Volumes 1-5 of** *The Orchadian*

  Advance orders and payments have been somewhat less than expected; but a very generous donation towards the cost of publishing has been received from the Mackay and District Orchid Society (Queensland). Typesetting is now well advanced and, allowing for the voluntary time John Womersley will need to spend on proof-reading when he returns from overseas, we estimate that the publication date will be in June or July 1984. Readers should remember that the number of copies to be printed will be limited in order to keep costs down; so advance orders are necessary to ensure against disappointment. The price is $5.00 per copy (including postage).

- **"Marketing" for Membership**

  In the September 1983 issue (Vol. 7, No. 9 p. 202) I raised the question of where ANOS has failed and whether we need the voluntary services of an "image-maker" who, among other things, would achieve a large increase in our membership and hence in funds. This question has been before ANOS Council — off and on — for some time; but inertia has persisted — until February, 1984, when Council's agenda included a submission on "Marketing". As a result, Council passed a motion as follows:

(1) that the Society writes to the Head of the School of Marketing, University of N.S.W. requesting assistance;
(2) that the Australian Marketing Association be approached similarly;
(3) that an "article", be published in *The Orchadian* describing the Society's problem and calling for an ANOS member with relevant Marketing skills to come forward.

The outcome of items (1) and (2) will of course be some time in the future. Meanwhile you are now reading the "article" referred to in (3) and I am hopeful that it will bear fruit here and now — and not in the sweet by-and-by. Council also decided to send a copy of the "Marketing"submission to all ANOS Groups for comment. . During Council's discussion it became apparent that not everybody had read the "editorial" of last September. If you care to re-read it now you should note that the passage of time has invalidated one of my statements. ANOS Council no longer comprises "a handful of members drawn from the three Sydney Groups". It now includes enthusiastic Councillors from non-metropolitan Groups and its deliberations have benefitted considerably from closer contact with ANOS Groups generally. We hope to be able to publish an article on this new aspect shortly. Meanwhile whether you have"relevant Marketing skills and experience" or just natural drive and a desire for action — please volunteer your services without delay.

ORCHID RESEARCH NEWSLETTER

To promote knowledge about current research world wide, and to eliminate any overlap of projects The Herbarium, Royal Botanic Gardens, Kew, has established an index of orchidologists listing their current and future research projects.

Commencing from January 1983 the editors, Jana Z. Stirton and Dr P.J. Cribb have published an "Orchid Research Newsletter" (twice a year). This provides an up-to-date information exchange. Access is available by way of an annual subscription to the Orchid Research News letter for £3 (English), to cover costs of reproduction and postage.

Examples of the contents of issue number 3 (January 1984) are:

a note on Kew Library's Current Awareness List; a list of new subscribers (and contributors of data) and their addresses; recent taxonomic literature (a list of authors, subject matter and source of publication); book news; the AOF seed bank; orchid material needed and/or offered for research.

In short the Newsletter keeps its subscribers up-to-date on who is doing what worldwide.

We reprint, for the benefit of our readers, the following two items by Mark Clements on page 5 of issue number 3.

The Conservation of Orchids Using Symbiotic Methods at the Royal Botanic Gardens, Kew

The objective of this project is to attempt the micropropagation of rare orchids using *in vitro* "symbiotic" germination techniques similar to those already established and in use at the National Botanic Gardens, Canberra, Australia.

This research is based on two assumptions. Firstly, that orchid seed germinates in the wild only when infected with an appropriate mycorrhizal fungus, and secondly, that a balanced association between the two organisms, necessary for the seeds to germinate, can be achieved *in vitro*. The system used has worked well especially with Australian orchids and there is every indication that it will also work with most European species.

The significance of using the "symbiotic" method of germinating orchid seeds goes far beyond the immediate goal of growing any one orchid species from seed for the first time. Since the symbiotically grown seeds are infected with the appropriate mycorrhizal fungus when potted up they stand a greater chance of survival than asymbiotically produced seedlings. Symbiotically grown seedlings are in fact easily established when transferred to the field. I believe, that we now have the technology necessary to reintroduce large populations of orchids back into their natural environment.

The specific aim of much of the research at Kew is the micropropagation of rare British and European species such as *Cypripedium calceolus, Orchis militaris, O. simia, Himantoglossum hircinum* and *Liparia loeselii* and to establish the technique here so that it may be used on other rare orchids. This project is now entering its second year.

M.A. Clements

Recent Publications on the Micropropagation of Orchids from Seed

The recent literature on orchid micropropagation is widely scattered in a number of publications, some of which are difficult to obtain. Because of this, important references are often overlooked. The following titles are, in my opinion, the most sifnificant recent contributions on orchid seed propagation.

Arditti, J., 1982. *Orchid Biology: Reviews and Perspectives, II.* Cornell University Press, Ithaca and London. This is an essential reference with an appendix where a considerable body of information relating to orchid seed propagation has been brought together.

Clements, M.A., 1981. The germination of Australian Orchid seed. *Proceedings of the orchid symposium, 13th International Botanical Congress, Sydney,* 1981, Orchid Soc. New South Wales, pp. 5—8. The first account of the successful germination of many species of Australian orchids.

Clements, M.A., 1982. "Developments in the symbiotic germination of Australian terrestrial orchids". In Stewart, J. and Van der Merwe, C.N., eds. *Proceedings of the 10th World Orchid Conference,* 11—17 September, 1981, Durban, South African Orchid Council, Johannesburg. A useful reference for those wishing to attempt the symbiotic germination of orchid seed.

Frosch, W., 1983. Asymbiotic propagation of *Ophrys holoserica* with flowers after 22 months. *Die Orchidee,* 34(2): 38—61. A useful account of the successful propagation of *Ophrys holoserica* from both green or mature seeds, and transferal of seedlings to potting mix.

Lucke, E., 1982. Samenstruktur and Samenkeimung europaischer Orchideen nach Veyret sowie weitere Untersuchungen (Teil 2). *Die Orchidee,* 33:8—16. An essential reference giving an account of the methods used in the asymbiotic germination of *Cypripedium* spp. from green pods. In German.

Vogelpoel, L., 1980. *Disa uniflora* — its propagation and cultivation. *Amer. Orchid. Soc. Bull.,* 49:961—. An account of the methods used in germinating *Disa* species and hybrids.

von Ramin, I., 1983. Over het opkweken van Europese orchideeen op kunstmatige voedingsbodems (2). *Orchideeen,* 45(1): 21—24. ("On raising European orchids on artifical nutrient substrates (2)."). A useful but brief account of the methods used when pricking out seedlings following germination on nutrient agar. In Dutch.

Warcup, J.H., 1981. Orchid mycorrhizal fungi. In *Proceedings of the orchid symposium, 13th International Botanical Congress, Sydney,* 1981. Orchid Soc. New South Wales. pp. 1—7, 57—63, 73. An account of orchid mycorrhizal fungi and their value in orchid seed germination, with particular reference to the saprophyte species such as *Galeola.*

Warcup, J.H., 1981. The mycorrhizal relationships of Australian orchids. New Phytol., 87: 371—381. A summary of work carried out by the author over the past decade on the symbiotic germination of Australian orchids.

M.A. Clements

A Further Note on *Dendrobium johannis* Rchb.f. and *D. semifuscum* (Rchb.f.) Lavarack & Cribb

In *The Orchadian* **Vol 6 no. 9 (1980) there appeared an article by Phil Cribb and myself in which** *Dendrobium johannis* **var.** *semifuscum* **was raised to specific rank as** *D. semifuscum* **(Reichb.f.) Lavarack and Cribb. Several people have complained since that they remain somewhat confused about the differences between** *D. johannis* **and** *D. semifuscum* **and, in an attempt to remedy this, I have prepared a figure and description of** *D. johannis* **as it is now understood (see fig 1). The description and figure in "Australian Indigenous Orchids Vol. 1" on pages 472-473 (see fig 2) now applies to** *D. semifuscum.*

Dendrobium johannis Reichb.f., Gdnrs Chronicle (1865) 890 & Xenia Orchid. **2** (1874) 165, t. 169, iii, 7, 8; Curtis Bot. Mag. **21** (1865) Tab. 5540; Bth., Fl. Aust. **6** (1873) 279; F.M. Bail., Qld. Flora **5** (1902) 1525-6; Krzl., Pflanzenreich Heft **45** (1910) 156; Rupp & Hunt, Proc. Linn. Soc. NSW **72** (1948) 243-244; Lavarack & Cribb Orchadian **6** (1980) 209-211.

An erect epiphyte. Stems 8-25 x 1-2 cm, swollen at the base then fusiform. Leaves 3-8, confined to the apical nodes, 8-15 x 1-1.5 cm, thick in texture, lanceolate, not petiolate. Racemes usually one per stem occasionally 2 or 3, 10-25 cm long, 2-20 flowers; peduncle usually shorter than, or equal to, the rachis; pedicels 2-2.5 cm long. Flowers 2-3.5 cm diameter, fragrant, widely spreading, multi-coloured, the sepals and petals twisted and chocolate brown to dark purple usually rather lighter in colour and striped towards the base, labellum midlobe sulphur yellow, lateral lobes white or yellow with prominent purple striations, column purple or brown, anther white. Dorsal sepal 10-15 x 3-5 mm untwisted or twisted once, apex acute to obtuse. Lateral sepals 12-16 x 3-4 mm usually twisted once, acute or obtuse. Mentum about 5 mm, approximately parallel to the column. Petals 10-25 x 2-3 mm, narrower at the base, spathulate, obtuse or acute, twisted once or twice. Labellum 12-16 x 8-10 mm when flattened, the disc straight, the midlobe somewhat decurved from it, conspicuously 3-lobed; lateral lobes about 5 x 4 mm, erect on either side of the column; midlobe 5-8 x 3-5 mm ovate, never broader than the lateral lobes when flattened; disc with three rather low keels which terminate near the apex of the midlobe in three high callose ridges, the centre one extending further than the lateral pair, smaller subsidiary callose ridges sometimes occurring near the base of the midlobe. Column 3-4 x 2-3 mm, apical margin serrate with a prominent tooth on either side of the anther, stigma oblong, rostellum narrowly rectangular; column foot 5-7 mm long with a prominent bend at the entrance of the nectary so that the nectary is approximately parallel to the collumn. Anther about 2 x 1.5 mm with a narrow papillose rostrum.

This species has been recorded from the eastern part of Cape York Peninsula from the tip of Cape York to about Coen. It is likely that it also occurs on the Torres Strait Islands and may also be found in southern New Guinea. It is a plant of moister open forests and rainforest margins and swamp forests where it often grows on *Tristania suaveolens* and *Dillenia alata.* The flowering time is autumn from March to June and the flowers are long-lasting.

The features which most readily separate these two species lie in the anther cap, the angle at which the mentum or spur is held and the size of the mid-lobe of the lip.

D. semifuscum has a deeply notched anther cap; a mentum held at a broad angle of almost 90° to the column; and a midlobe which ranges from considerably broader than the lateral lobes to only slightly narrower or about the same width (see fig 3).

D. jonannis has an anther cap with only a small notch; has a prominent bend in the column foot, so that the mentum is approximately parallel to the column; and has a midlobe which is narrower — in fact usually much narrower — than the lateral lobes. The flowers of *D. johannis* are usually smaller with relatively broader, less twisted petals and sepals.

The flower colour is also different in most cases, with *D. johannis* usually having deep purple petals and sepals while those of *D. semifuscum,* are typically yellow to dark brown. Vegetatively the two species are quite similar, but *D. johannis* is usually a smaller plant, often with more purple in the stems and leaves.

There is some degree of overlapping in the above set of differences and, on morphological grounds, it would be possible to argue that these two entities should be regarded as varieties rather than as species. One factor which influenced me in favouring the status of species is the separation in flowering times. *D. johannis* flowers in autumn and *D. semifuscum* in spring; and in the natural habitat I have seen no evidence of any overlapping of these flowering periods. Therefore it is certain that the two entities are separated genetically. A further separation lies in the habitat in which each grows. *D. johannis* always occurs in shaded, moister areas on the east coast of the Peninsula — never in the harsh, seasonal *Melaleuca* forest which is the stronghold of *D. semifuscum.*

The likely explanation of all this is that one original species has split into two parts, possibly in response to changes in the pollinator and that these two parts have now diverged as they seek to attract different pollinators. It is a matter of judgement as to whether they have diverged sufficiently to be considered as separate species. The differences present are of a similar magnitude to those used to separate some other species of the section Ceratobium and, when this is added to the genetic isolation, there is, in my opinion, little doubt that the specific rank is justified.

National Parks &
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February, 1984

Figure 1: *Dendrobium johannis* Rchb.f.

a.	Plant and inflorescence
b.	Flower from front
c.	Flower from side
d.	Column from front
e.f.	Anther cap
g.	Median longitudinal section of column and labellum
h.	Column and labellum from side
i, j.	Labellum flattened
k.	Pollinia

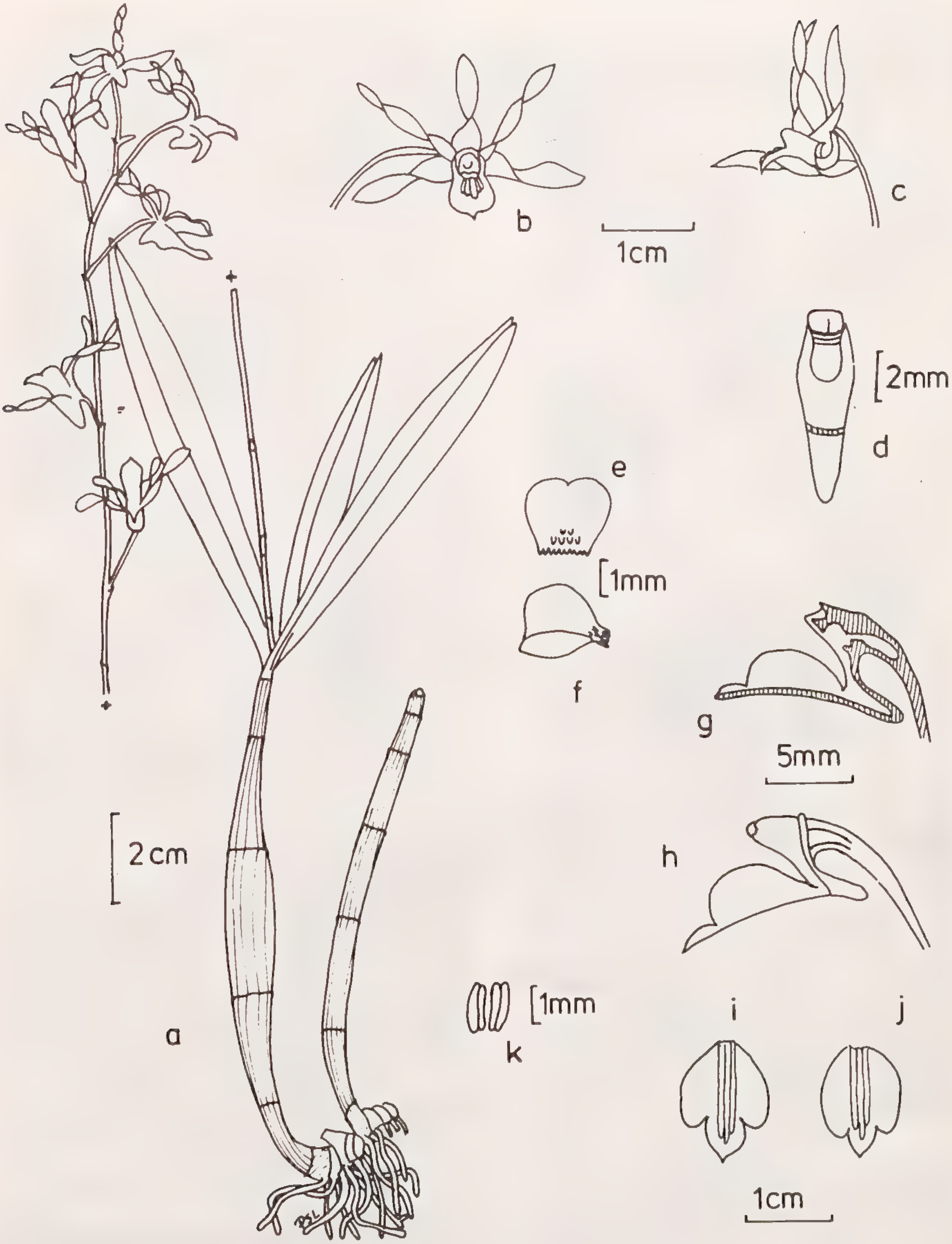
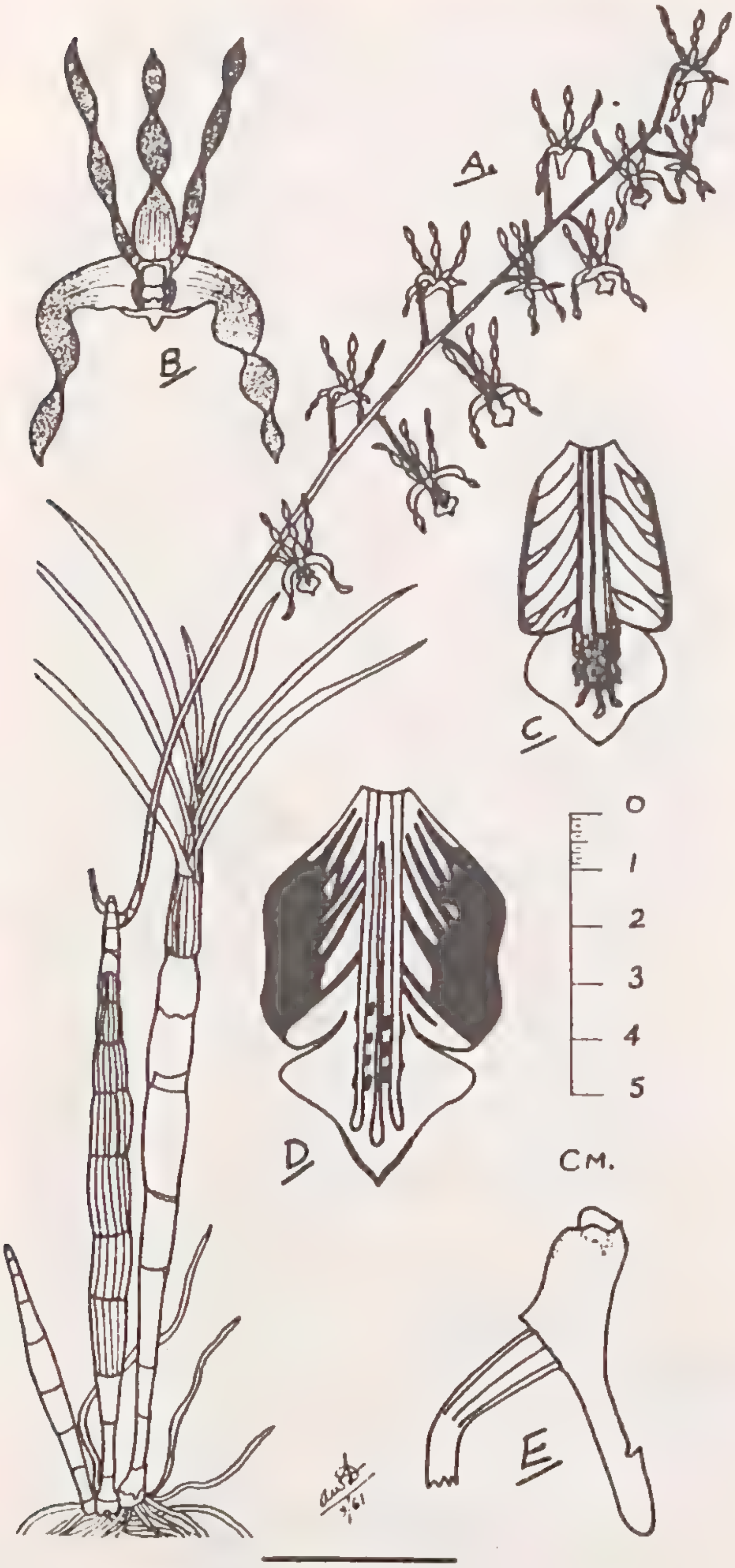


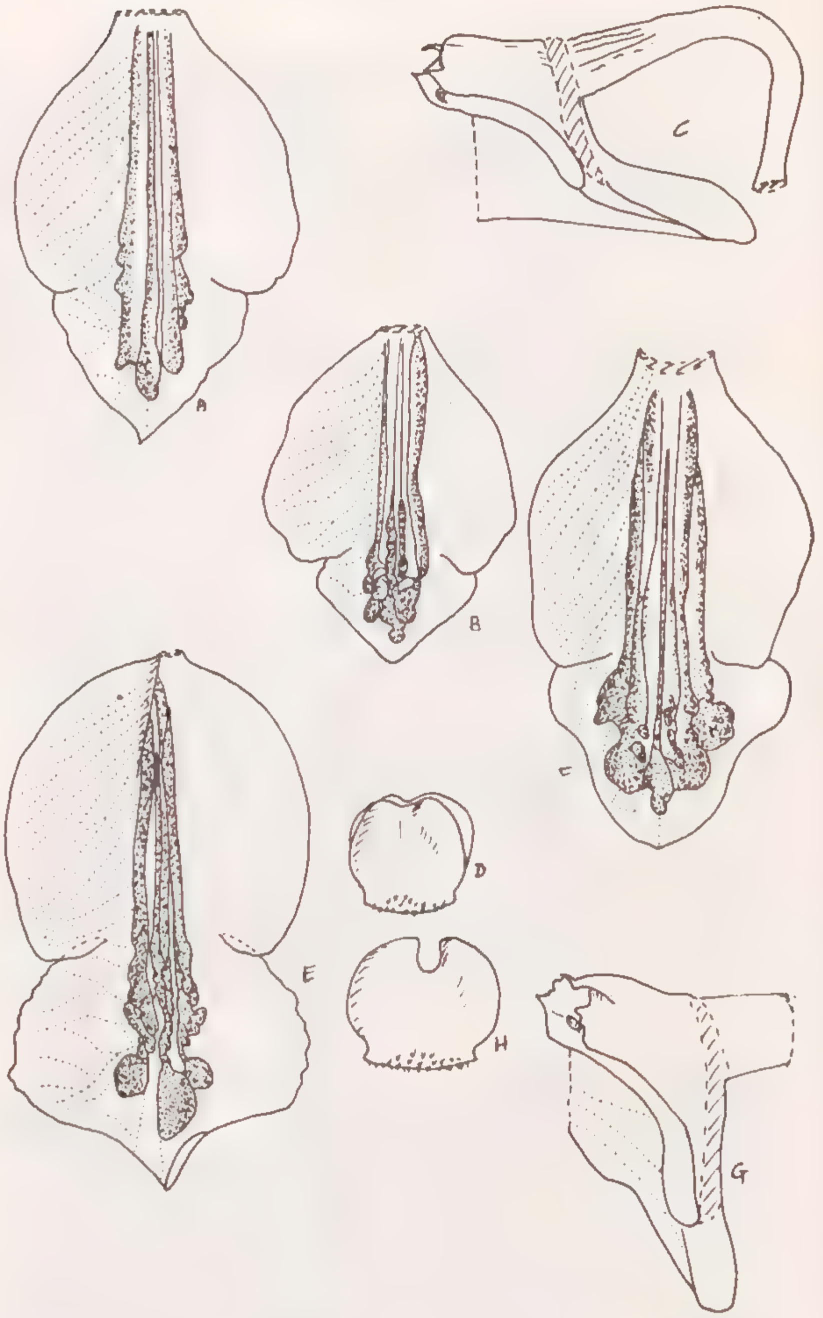
Fig 1 Dendrobium johannis Rchb. f. Drawing: P.S. Lavarack

Figure 2 ***Dendrobium semifuiscum*** (Rchb.f.) lavarack & Cribb (1980)
— an illistration from p473, *Aust. Indg. Orch. (1969)* in which Dockrill depicts this taxon as *D. johannis.*



A Portion of plant . . . to ½ indicated scale
B Flower from front . . . to scale x 2
C Labellum flattened (Melville Is. specm.) to scale x 3
D Labellum flattened (Cooktown specm.) to scale x 5
E Column from side . . . to scale x 5

Figure 3 Comparison of the Two species reprinted from *The Orchadian,* **Vol. 5, No. 9, p. 211, Sept 1980.**



D. johannis Rchb. f.
A. Labellum × 3
B. Labellum × 3
C. Column, mentum and ovary × 3
D. Another cap × 6

D. semi fuscum (Rchb. f.) Lavarack & Cribb
E. Labellum × 3
F. Labellum × 3
G. Column, mentum & ovary × 3
H. Another cap × 6

NOTE: A, C and D — Lavarack, Mossy Creek, Qld.
B. — from Bot. Mag. t 5540
E. — Lidderdale
F - H — Lavarack, Olive R. Qld.

A tabulation of the differences between the two spaces was given in the *The Orchadian,* Vol. 5, No.9, p 210.

CULTIVATION BASED ON HABITAT OBSERVATION

IX *Cymbidium suave* R. Br.

by Michael Harrison

Because of its wide distribution and relatively common occurrence, *Cymbidium suave* is a familiar species to many growers of native orchids. In the Sydney area, where I am most acquainted with it, the sight of a huge plant, sometimes approaching a metre across, is usually one of the highlights of a day in the bush; and when such a specimen is in flower, in October or November, it may completely fill a gully with its delightful perfume on a still, sunny morning. The only drawback is that most plants are situated high up in the trees and, consequently, they cannot be studied at close quarters. Occasionally, however, a plant is seen low down on the trunk of a tree or growing happily out of the top of an old stump, so that its beauty can be appreciated at close hand.

C. suave is distributed along the east coast of Australia, from at least as far south as the Clyde River in southern N.S.W. to the base of Cape York Peninsula in northern Queensland. Its altitudinal range is also considerable and it may occur from sealevel to the tops of the ranges. Although it is sometimes encountered in or near rainforest, its preferred habitat is the open hardwood forests which comprise the bulk of this country's natural forest flora. It typically colonises large *Eucalyptus* species, in either dry or wet sclerophyll forest situations, where it germinates and grows in a split or hollow in the upper trunk or a major lateral. Generally speaking, it is able to develop only where the roots have access to rotting heartwood, for it is from this broken down material that the plant is able to extract the nutrients it needs for sustained development. In many areas termites are responsible for providing this orchid with its food supply, as they relentlessly destroy the heartwood of countless numbers of trees every year, leaving their excrement as a hard-packed core into which the orchid sends its roots. These rotting centres are known as "mud-guts" in the timber industry, and many a forest giant has been felled and then declared worthless because of an undiagnosed "mud-gut". In fact, the presence of *C. suave* growing in the crown of a tree is enough to convince timber getters that their efforts would be wasted.

From high up in its forest home, *C. suave* sends its roots deep into the host tree, where they may extend the whole length of the trunk, up to eight or ten metres, extracting food and water. Long, adventitious shoots are also produced and these travel along the inside of the trunk searching for other cracks and hollows to colonise. In time, a plant of *C. suave* is able to completely dominate its host, with as many as a dozen secondary "plantlets" growing from each available opening. Anyone who has ever grown this orchid from seed in a sterile flask will be familiar with these adventitious shoots which develop rapidly and very quickly fill the whole space of the flask. Although it seems unkind to say, *C. suave* is probably responsible, at least in part, for the eventual demise of its host. Once a plant has gained an initial foothold, it usually grows fairly quickly and, within a couple of years, has developed multiple growths and a large root system. Even if it cannot extend into another hollow above or below, its pattern of growth, with several new leads being produced each year, continues to enlarge the opening in the trunk. This in turn allows more and more moisture to penetrate to the heartwood during wet weather, and also the long roots keep open the lines of communication for fungi and bacteria.

C. suave also regularly grows on *Casuarina torrulosa*, the Mountain Oak, in cooler mountainous areas and in sheltered valleys and ravines. On this host it behaves more like a typical epiphyte, with at least some of its roots growing outside on the bark, although these never reach anything like the dimensions of the internal roots. Another favoured situation is on rotting tree stumps, especially beside old logging tracks, and I also remember seeing a very large plant growing from the top of a giant Elkhorn Fern some years ago.

Unlike the other two Australian members of the genus *Cymbidium*, (*C. madidum* and *C. canaliculatum*) *C. suave* has no pseudobulbs, but instead produces woody stems which continue to grow and elongate for several years. As new leaves are produced from the apex of each stem, the older leaves die and snap off, leaving the stem sheathed in the fibrous bases of the dead leaves. These stems may attain a considerable length, at times up to half a metre, which would indicate a life of perhaps ten years or more. The stems eventually become pendulous with age, as they grow longer and longer; although the leafy head always maintains a more or less erect position. The pendulous inflorescences are produced from the stems, below the green leaves, and are up to 300 mm in length and usually carry upwards of thirty individual flowers. The flowers are green with a yellow and brown labellum and are, on average, about 20 mm across. They are highly perfumed and must certainly be attractive to their pollinator(s), for it is not uncommon to see a plant with scores of green pods hanging below it. Close to my home, in the foothills of the Blue Mountains northwest of Sydney, there is a large *C. suave* growing out of a *Eucalyptus punctata*, commonly known as the Forest Grey Gum — one of the feed trees for the Koala. This plant is situated less than three metres above ground level, making it easy to study, and last year I counted in excess of eighty fruits on it.

Compared with most other epiphytic orchids, *C. suave* has chosen a relatively harsh environment, the main advantage of this being, I suppose, a lack of competition from other epiphytes. Conditions in the hardwood forests are considerably more severe than those enjoyed by the great majority of orchids, with greater extremes of temperature and generally higher levels of light and exposure to strong winds. The secret of its ability to exploit such as environment is in its root system. As well as travelling many metres in search of sustenance, the fact that the roots travel along the inside of the host tree is the primary reason for this orchid's success. Buried deep within the trunk, the roots are insulated from the searing heat of summer and the freezing cold of winter and are able to continue to function under the most rigorous conditions. Even the devastating fires which periodically afflict the hardwood forests of Australia cause no longterm problem, for fresh shoots soon appear and the orchid re-establishes itself from its rootbase.

The same is also true of *C. canaliculatum* which, in many parts of its range, is exposed to even more severe extremes of climate. In this species the thick, almost succulent leaves and large rounded pseudobulbs allow the orchid to store water during the seasonal rains in order to survive the lengthy dry season. *C. canaliculatum* is our most hardy epiphyte, occurring mainly on the western slopes of the Great Dividing Range, from central N.S.W. northwards to Cape York Peninsula and across to the Northern Territory and top end of Western Australia. Like *C. suave* it also mainly colonises *Eucalyptus* species and sometimes grows to massive proportions with literally hundreds of pseudobulbs.

CULTIVATION

It has been said of our three *Cymbidium* species that *C. madidum* is the easiest to grow in cultivation and *C. canaliculatum* is the most difficult. This leaves *C. suave* somewhere in the middle, and I must say I agree with this assessment.

C. madidum, the largest of the three, with pseudobulbs up to 250 mm tall, will thrive in commercial cymbidium compost and, with an adequate feeding programme, usually grows so strongly that little more needs to be said. The only thing to be noted is that it requires repotting into fresh compost regularly, every two or three years, for optimum growth and condition. Also, it needs to be divided periodically for ease of handling, but growers must beware of the dead leaf bases clothing the old pseudobulbs; they have sharp spines capable of inflicting a painful wound.

On the other hand, ***C. canaliculatum*** is an orchid with which I have never had much success. I seem to be able to keep it growing for only a couple of years before it starts to regress, producing smaller, stunted pseudobulbs which eventually peter out, and the plant shrivels and dies. It also seems very prone to fungus attack, especially of developing shoots. In particular, high levels of humidity seem to disagree with ***C. canaliculatum*** and this is a particular problem along the east coast where the relatively even year-round rainfall maintains the humidity. On the western slopes and plains where this orchid is at home the rainfall is distinctly seasonal, usually occurring from January to April. At other times of the year there is seldom any significant or sustained rain and the humidity is correspondingly low. The orchid is adapted to these conditions and will not usually take kindly to the damp coolness of our coastal winters. During the warmer months, especially in the post-Christmas period, the orchid requires fairly heavy watering to develop its newly forming pseudobulbs but good ventillation must be provided and once the pseudobulbs have filled out, watering must be severely reduced. Occasionally, a plant is seen in cultivation which appears to be growing well but in my experience these are few and far between and I can just about count on one hand the number I have observed to be performing successfully over a reasonable period of time. One of the best specimens I know is a plant of the "var. sparkesii" colour from which has been left in its original log. This log has been jammed into a large pot and is kept in a position facing north in a sheltered spot but quite open to all the elements. It is NOT grown in a bush house or greenhouse with other orchids and this, I believe, is a clue to the successful cultivation of **C. canaliculatum.** On all but one of the few occasions I have seen this orchid grown successfully, the story has been the same. The orchid is situated out in the open, away from the humidity and tranquillity of the greenhouse environment and, just as importantly, away from the heavy watering of many orchid houses. The only exception to this rule came a few years ago when I saw two beautifully cultured plants in full bloom, each with dozens of spikes. They were growing in commercial cymbidium compost and, apparently, were being maintained within a collection of showbench Cymbidium hybrids and were treated like any other orchid in this bush house. I cannot understand it.

Getting back to ***C. suave,*** there are many fine specimens in cultivation and although the points I have mentioned in relation to *C. canaliculatum* are no less valid here, *C. suave* is able to tolerate "softer" conditions and is therefore more amenable to normal orchid culture. I learned my lesson with this species when, in my early days, I collected a plant out of a tree which had been pushed over during road making operations. After about an hour of chopping away at the surrounding timber with a tomahawk, I was able to remove the plant with a reasonable amount of the root system still attached. I took my prize home and placed it in a deep terracotta pot in a compost of tightly packed wood chips from a rotting stump. The orchid grew well in my shade house but within twelve months had developed an unsightly black/brown mottling all over the leaves. At first I suspected virus but analysis by the Department of Agriculture Laboratory (a free service offered to the home gardener by this department) diagnosed fungus infection. The other thing I noticed about this plant was that in spite of multiple old racemes, it would not flower for me. Then we moved house and I was forced to leave all my larger orchid pots, including the *C. suave*, sitting out in the back garden of my parents' home until I was able to build an orchid house large enough to hold them. I soon noticed that all the new leaves being produced were free of the fungus and I began so suspect that this "new" backyard environment was responsible for the obvious improvement. Not long afterwards, the plant produced a lovely display of flowers and I was convinced. Even though I completed the new bush house soon after this, the *C. suave* was never moved into it. Plants I have subsequently acquired are treated in a similar fashion.

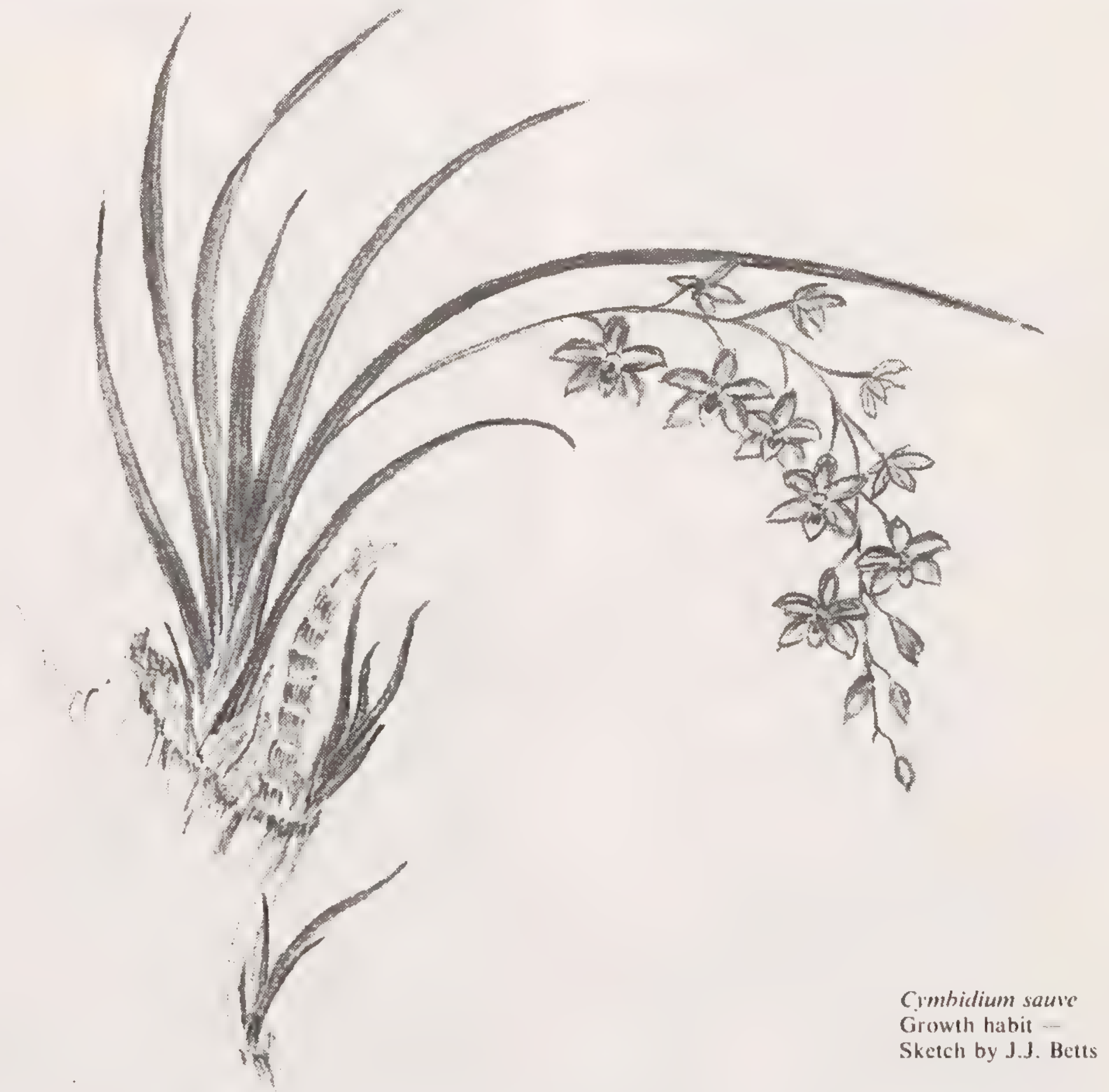
Fresh air is the single most important factor in the successful culture of *C. suave* and one has only to consider the natural habitat of this orchid to see this is true. Adequate light is also important, especially for good flowering. A plant in the wild is typically situated well up in the crown of the host, six to fifteen metres above the ground; and although the foliage provides a certain amount of shade the levels of light are usually fairly high. This may not always be the case, and individuals are occasionally seen in very shady positions, but this is the exception rather than the rule and I would suggest a shade factor of not more than 50% in cultivation. Although I prefer to keep my plants of *C. suave* out in the open, they can be grown very successfully in a bush house, as long as the design and position allow for good ventillation and the plant is positioned in a well lighted, airy spot and not in a corner or where it may be stifled by surrounding plants.

With adjustments to compost composition and/or watering, either terracotta or plastic pots may be used. Because of the porous nature of terracotta, the compost used for culture in this type of pot may be slightly heavier or more moisture-retentive than that used for plastic pots. And if there is to be no variation in compost, then plants in plastic pots must receive less water than those in terracotta. This is a basic rule for general orchid culture and most growers choose one or the other type of pot and stick to it. This allows the grower to accustom himself to the characteristics of the pot/mix combination, and by experimenting with both the composition of the mix and levels of watering, a basis for long-term cultural techniques can be achieved. Some fine tuning will always be necessary, and some of the more delicate species may require day to day attention, but once a fundamental programme of management has been established, the other variables will usually fall into place. Factors such as light and humidity levels, ventillation and feeding techniques can be adjusted to suit the basic programme, and the finer considerations such as frequency and timing of damping down and misting (as opposed to watering), and positioning and orientation of individual plants within the orchid house, whilst never static procedures, are at least based on a standard. As for watering, no one can really advise the grower how much or how often to water. This is a matter of personal judgement based on observation of the plant and its reactions to the conditions provided. Plants in cultivation should be watered as often as they need water and only they can indicate their needs. It is up to the grower to interpret the message, taking into account such variables as the condition of the roots (Are they dormant or are they actively growing? If they are actively growing then watering should be increased), external weather conditions (Is it warm or cool, windy or calm, humid or dry?): size and vigour of the plant, type of pot and condition of potting mix.

There is one rule for watering and it is this: it is better to err on the side of too little water than too much water. Most orchid species are able to tolerate periods of dry weather and although they may dehydrate to a certain extent, this can easily be observed and watering increased to remedy the situation. Conversely, overwatering can cause real problems, the most common being root rot due to a constantly wet and soggy medium. This reduces aeration and encourages fungus infection. It is much easier to revive a plant that has been kept too dry than it is to recondition an overwatered plant whose roots have become waterlogged and rotton. Of course, there are periods when plants should be watered freely to achieve the best possible growth and development and, again, I refer you to the roots. If they are actively growing, with fresh green tips, then this is the time to water heavily and frequently.

For *C. suave*, I prefer a deep pot to allow for good root development, and a compost made up of *Eucalyptus* wood chips, "mud-gut" and cymbidium compost in equal proportions. Some growers use pine bark, charcoal, pebbles, etc. in various mixtures and I expect just about any free draining but slightly moisture-retentive mix would do. In contrast to most orchid species, *C. suave* does not require regular repotting and, in fact, resents disturbance. It is quite able to cope with a compost that has broken down, as long as it is not soggy. My original plant, collected in 1969, is still in its original pot. One of the main reasons this orchid is difficult to establish in cultivation is because its roots are often badly mutilated when it is collected. This is difficult to avoid due to the nature of the roots, but it is better to take the time and salvage at least some of the roots rather than hack the plant off at the point where it is growing out of the tree. It is senseless to collect *C. suave* in this manner for it will not survive. Patience and persistence will be rewarded, and sooner or later a plant will be found in a fallen tree where it can be collected with care and the knowledge that it is being rescued, not plundered.

Lot 2, Howes Road,
via Wilberforce,
February, 1983 **N.S.W. 2756**



Cymbidium sauve
Growth habit —
Sketch by J.J. Betts

THE REDISCOVERY OF *Dendrobium eximium* Schltr

by T.M. Reeve

Dendrobium **section** ***Latouria*** **contains some of the largest and showiest of the New Guinea orchids, and possibly the largest flowered of them all is** ***Dendrobium eximium*** **Schltr. As the latin name implies it is truly an exceptional species with petals sometimes reaching 4.5 cm in width and flowers over 10 cm broad.**

D. eximium was collected 5 times at the beginning of this century, between 1902 and 1913, when botanical exploration in New Guinea was at its peak. It was first discovered by Rudolf Schlechter in April 1902 on the Torricelli Mountains near Aitape, in what is now known as the West Sepik Province of Papua New Guinea (along the north coast adjacent to Irian Jaya). The name and description of the new species was published in 1905. A few years later, in 1909, Schlechter again found the species in the same range of mountains but on the inland side.

Two further collections were made in Dutch New Guinea by both Lorentz and van Nouhuys. Plants were cultivated at the Bogor Gardens and subsequently described as *D. bellum* by J.J. Smith in 1910. The last known collection was made during the British Wollaston Expedition to Dutch New Guinea (possibly by Boden Kloss in 1913), but apparently it was not in flower at the time as no specimens were made. Mr Wollaston gave a plant to the Honourable Charles Rothschild who grew and flowered it in his glasshouses in England. Specimens were deposited at Kew and in 1916 H.N. Ridley named it in honour of Mr Wollaston (*D. wollastonii).*

J.J. Smith in 1911 had recognised that his *D. bellum* was identical with the earlier-named *D. eximium*, and later it was shown that *D. wollastonii* was synonymous also.

After 1913 there were no further records of this attractive species having been collected again; and presumably the plants at Bogor and in England died out in time. Having seen the herbarium specimens at Kew and elsewhere in 1979, and noting the exceptionally wide petals, I was keen to visit the Torricelli Mountains to see if this beautiful species could be rediscovered and brought into cultivation again.

Following an expedition from Laiagam (in the Highlands) to Ambunti on the Sepik River in 1980, I heard about an orchid collector and grower in the West Sepik Province — Mr Bruce Mulholland from the Mission at Anguganak. I was fortunate enough to meet up with him in Wewak, and although I described *D. eximium* to him, he was not sure that he had seen it. Plans were then made for an official expedition to the Torricelli Mountains to be conducted during the 1981 dry season.

The expedition was duly carried out from 20th July to 17th August 1981. Three separate ascents were made to the top of the Torricelli Divide at Mt Sulen (Ningal Gap), Mt Sapau and just east of the Lipan Pass (Tadje Gap) — all areas south to south-east of Aitape. The first (and best) flowering specimen of *D. eximium* was discovered on our first ascent and only three days after leaving Laiagam. Probably the slightly expanded notes from my diary will cover the events best.

Monday 20th July 1981: Departed Laiagam (Enga Province) at 9.36 a.m. in a chartered Cessna 206 aircraft and headed north-west directly for the West Sepik Province. It took a mere 24 minutes to cover what required 10 days hard walking during our 1980 expedition from Laiagam to Ambunti. We passed directly over Ambunti and reached Anguganak on the inland low foothills of the Torricelli Mountains at 10.41 a.m. (65 minutes flying). At 250 m above sea level Anguganak was hot and steamy. The rest of the day was spent examining the orchid collections of Bruce Mulholland and making some botanical specimens. Included in flower were *Dendrobium johnsoniae, D. macrophyllum* (2 varieties), *Eria imitans, Habenaria viridi-alba* and *Eulophia emarginata.* At night we drew up plans for the 3 weeks patrolling in the Torricelli Mountains operating from Anguganak and Sibilanga as bases. [Although Mr Mulholland was able to accompany us only on the Mt Sapau ascent, he kindly arranged carriers for us and accommodation at the two bases.]

Tuesday 21st July: Word was sent out asking for carriers living higher up to come in ready for work the next morning. Spent the day collecting orchids in the vicinity of Anguganak which is adjacent to the Yangkok Government Patrol Post of the Lumi District of the West Sepik Province. The airstrip is right alongside the Opan River which flows into the swamps of the Sepik River Valley. Our first find was *Eulophia squalida* growing on the edge of the airstrip (the grass had been cut only a few weeks beforehand). One plant was in full flower with several others in bud. Other orchids collected in flower included *Dendrobium bifalce, Cadetia ceratostyloides, Acriopsis javanica* (very common) and *Taeniophyllum macranthum.* Labelled, photographed, pressed and pickled plants in the late afternoon.

Wednesday 22nd July: Lea Lewaini (from H.O.C., Laiagam), myself and 2 carriers/guides set off from Anguganak at 9.00 a.m. (late start after waiting for carriers to turn up) and walked northwards in the direction of the Torricelli Divide. At 2.50 p.m. we reached the "last" village, Sikel (at about 800 m), where we stopped and obtained overnight lodgings in one of the village's mens' houses. The carriers were paid off and returned to their own place. We discussed the purpose of our patrol and the head man (ex-Luluai) Mambu Suwalo appointed 4 men (including the owners of the bush) to take us up to the top of the Divide on the following day. [Mt Sulen; the saddle just to the east of Mt Sulen is known to aircraft pilots as the "Ningal Gap", and is about 1100 m in altitude and approximately due south of Aitape.] The village people were very hospitable and interested in our work. We slept on raised platforms made of the "bones" of the dried sago palm fronds which were rather hard.

Thursday 23rd July: Left Sikel village at 7.40 a.m. with the 4 carriers/guides. We crossed a small divide and then descended to Omgan Creek which we followed upstream for 2 hours. Several interesting orchids were seen here including *Dendrobium cochliodes* (Schlechter's original greenish-yellow form), *D. spectabile* (in fruit), *D. trachyrhizum* and *Bulbophyllum digoelense.*

At 11.05 a.m. we left the creek and climbed steeply up a spur of Mt Sulen. Here we found many orchids including the usual array of colourful mid-mountain jewel orchids which adorn the forest floor. *Calanthe kaniensis* was a new find for us. Amongst the epiphytes collected were *Coelogyne asperata, C. beccarii, Dendrobium auricolor, D. purpureum, D. subclausum, Eria imitans, E. oligotricha, Pholidota pallida* and *P. torricellensis* (which is probably synonymous with *Pholidota carnea*).

Just after lunch two small section *Latouria* plants were located on a fallen tree. The 2-leaved stems fitted *D. eximium*, but not being in flower one cannot be sure, as there are several species which are all quite similar vegetatively.

At 1.10 p.m. we had climbed up to 1000 m and, it being a hot day, we sat down to rest on a large fallen tree. As I reclined backwards, gazing up into a large strangler fig tree, I immediately spotted a white-flowered *Latouria* species in full bloom about 70 feet up from the ground. The colour and size indicated that it could only have been *D. eximium* or *D. forbesii*. One of the carriers (named Sapinus) was soon on his way up the tree (fortunately a strangler fig is easy to climb), but at about 50 feet up he ran into a hornets' nest and nearly fell out of the tree. He had to rapidly drop down about 10 feet on a vine. After a rest he climbed up the other side of the tree and soon he had the orchid in hand. As he turned it around the very large petals could be seen quite clearly. The stems of the plant were tied together with a small vine and then dropped. I managed to catch it safely and to my great delight recognised it as *D. eximium*. The plant (see photograph) bore 2 inflorescences, each with 5 flowers, and the petals were 4.5 cm broad. It was the best specimen seen on the entire expedition. Some time was spent photographing it, a few flowers were put into 70% alcohol solution and the rest carefully wrapped up for pressing back at the base. [The specimens are now preserved at Lae and Kew herbaria.]

We continued up the spur to the top of the Divide where we collected many interesting plants, including the 7-petalled white flowered *Rhododendron phaeopeplum* which later proved to be a first recording for Papua New Guinea. The weather was good so we collected until late. Eventually the guides took us to an old bush hut (used on hunting trips) quite near to the top of the Divide and there we camped for the night. No further flowering plants of *D. eximium* were collected.

The second patrol was made to Mt Sapau, much further east, but we collected only a single plant of *D. eximium* at 1300 m. On the third ascent to the mountains in the Lipan Pass area (which must be very close to where Schlechter came) we found this species to be plentiful. A large set was able to be pressed for distribution to herbaria and others were collected for cultivation. Our expedition had been successful.

Dendrobium eximium Schltr in K. Schum. et Laut. Nachtr. p. 162 (1905); in Fedde Rep. Beih. **1** : 497 (1912) et in Fedde Rep. Beih. **21** : Fig. 630 (1928).

Synonyms: *D. bellum* J.J.Sm. in Bull. Dep. Agric. Ind. Neerl. **39** : 7 (1910). [Illustrated in Nova Guinea **8** : Tab LXXXVIII C (1911) as *D. eximium*.]
D. wollastonii Ridl. in Trans. Linn. Soc. Lond. Bot. ii **9** : 165 (1916).

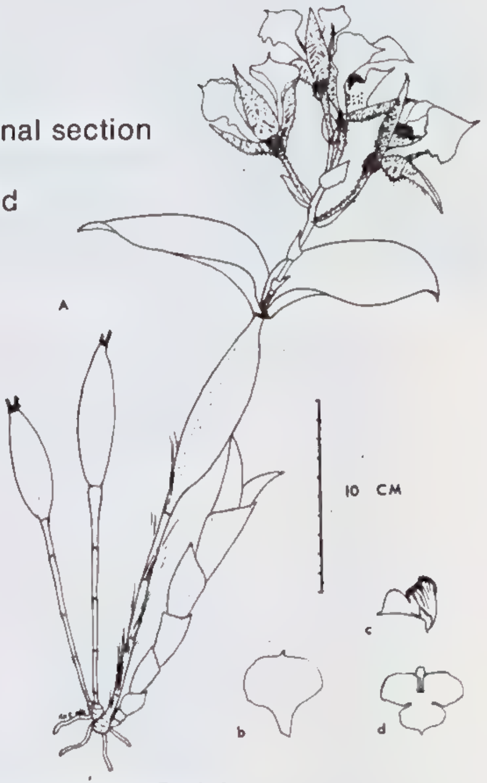
Description: Epiphytic *herb* up to 90 cm tall. *Roots* thick, white, to 4 mm diameter. *Pseudobulbs* clavate, slightly swollen at base then slender and terete for the lower half with apical dilated section slightly flattened and becoming somewhat grooved with age, brown or reddish-brown sometimes yellowish-green, 5—50 (—80) x 1.5—2.7 cm, each new stem bearing 2 leaves at the apex (seedlings may be 1-leaved). *Leaves* elliptic to oblong, obtuse (?) to acuminate, leathery, usually shiny dark green on top and paler below, 7—18 x 3.5—7 cm. *Inflorescences* terminal, 2—7 flowered; *peduncle* 4—7 cm long; *rhachis* 1—6 cm long; *bracts* ovate to lanceolate, acuminate, 1—2.5 x 1*-1.5 cm. *Flowers* large, showy, densely setose on outside of sepals and ovary/pedicel, 6—11 cm across (depending mainly on how much the petals open), sepals greenish becoming creamy yellow with purple spotting on the mentum and sometimes on the lower part of the sepals, petals white, labellum creamy-white with purple margins to sidelobes and striations/spotting on sidelobes extending slightly into midlobe; lasting about 3 months, sometimes with a slight honey scent. *Dorsal sepal* ovate — lanceolate, acuminate, 3.5—5 x 1—1.6 cm; *lateral sepals* oblique, wider at base, forming mentum 1.2—1.5 cm long. *Petals* glabrous, broadly rhombic — spathulate, apiculate to acuminate, 3.5—5.5 x 2.5—4.5 cm, often with lower margins revolute. *Labellum* trilobate, hinged, glabrous, expanded measurements 3.0—3.7 x 4.0—4.8 cm; *sidelobes* erect, subquadrate, c. 2.5 cm long with apex c. 1.5 cm wide and with large median white 3-ridged callus between the lobes; *midlobe* widely cuneate, apiculate to acuminate, c. 1.7 x 2.2 cm. *Column* white with some purplish coloration near stigma, c. 7 x 7 mm with 2 prominent erect tooth-like stelidia projecting at the sides of the anther cap; *column foot* white 1.0—1.3 cm long; *anther cap white, c. 4 x 4 mm; pollinia* 4, golden-yellow, c. 1.5 mm long. *Ovary* densely hirsute, purplish with greenish hairs; *pedicel/ovary* 2.5—5 cm long.

Type: Papua New Guinea: West Sepik Province, Torricelli Mountains, *Schlechter* 14316.

Distribution: *D. eximium* is recorded from 3 localities in Irian Jaya, although the exact origin of the Wollaston specimen is not known. On the Papua New Guinea side of the border it is known only from the Torricelli Mountains*. It occurs from 400 to 1300 m above sea level.

Dendrobium eximium Schltr (R.570) from the Torricelli Mountains; cultivated at Erave, Papua New Guinea. Drawn by T.I. Reeve

a. Plant
b. Petal
c. Labellum
— longitudinal section
d. Labellum
— expanded



Dendrobium eximium Schltr

Drawing: T.M. Reeve Oct. 1983

***Footnote:** It is interesting to note that several plant species which are apparently more common in Irian Jaya nave been recorded only from the Bewani — Torricelli range of mountains in the north west corner of Papua New Guinea. Apart from *Dendrobium eximium* other examples are *D. trichostomum* (although this does extend across to some ridges on the southern side of the Sepik Valley), *Bulbophyllum serra* and *Rhododendron phaeopeplum*.

Details of collections preserved in herbaria are as follows:

Papua New Guinea. West Sepik Province : Lumi District (Torricelli Mtns) : northern side 600 m, April 1902, *Schlechter* 14316 (BM, BR, K, P); Akur, southern side, 700 m, Sept. 1909, *Schlechter* 20114 (K, L, NSW); Mt Sulen, 1000 m, July 1981 *Reeve* 556 (K, LAE); Lipan Pass; 800—1000 m, August 1981, *Reeve* 570 (AMES, BISH, BO, CB6, E, K, L, LAE, NSW, Upng).

Irian Jaya. Alkmaar on North Coast, 1909, (collected by Lorentz), *Rachmat* 236 R (BO); Went Mountain, 400 m, 1909 *van Nouhuys s.n.* (BO).

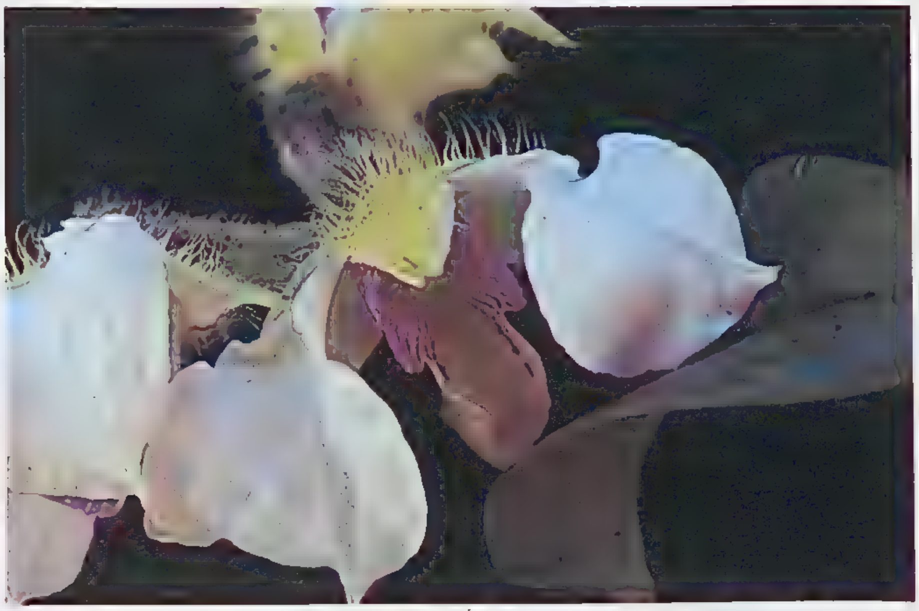
Cultivation: *D. eximium* has been grown in the P.N.G. Highlands at altitudes from 1100 to 1600 m and does well on tree-fern slabs. It appears to be quite an easy species to grow and flowers freely, usually from July to November. The flowers have a faint honey scent and last about 3 months. The size of the flowers and especially the width of the petals should ensure *D eximium* a useful place in the future as a parent of noteworthy Dendrobium hybrids.

Acknowledgements: I wish to thank Mr and Mrs Bruce Mulholland for their hospitality and help during our 1981 expedition, and also Mr Martin Gunther of Kuk and Mr Frank Hawkes of Erave for their effort in cultivating specimens on my behalf.

T.M. Reeve
Highland Orchid Collection
D.P.I., Laiagan
Enga Province
Papua New Guinea

October, 1983

Sapinus of the West Sepik Province P.N.G. with the plant of ***Dendrobium eximium*** rediscovered in July 1981.



Close up of ***Denbrodium eximum Schltr.***

Photography — T.M. Reeve

AN OCTOBER SHOWING IN SYDNEY

A selection of *Sarcochilus* exhibits from the ANOS Sydney Group's Twentieth Anniversary Spring Show, October 22-23, 1983.

UNLIKE the earlier Spring shows in August-September, this Show brought an abundance of desirable species that flower too late to have a forum for public viewing *en masse.* The sarcanthinae came into their own and Garry Wells had a field day with his camera. Our selection is limited to *Sarcochilus* but there were many fine exhibits from other genera – especially *Rhinerrhiza, Cymbidium, Phaius* and lesser known epiphytes from Queensland and Papua New Guinea.

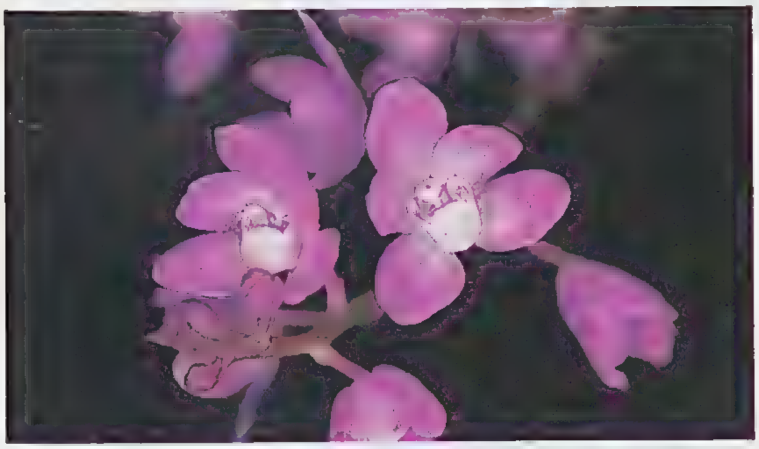


Figure 1: *Sarcochilus ceciliae* (Champion Species) X 2. Owned by Ben Wallace, this plant was gigantic in all its features: leaf length, raceme length and flower size. Racemes were up to 200mm; flowers 15mm across; leaves resembling a small Mt. Lindsay form of *S. hartmannii* rather than a normal *S. ceciliae.*

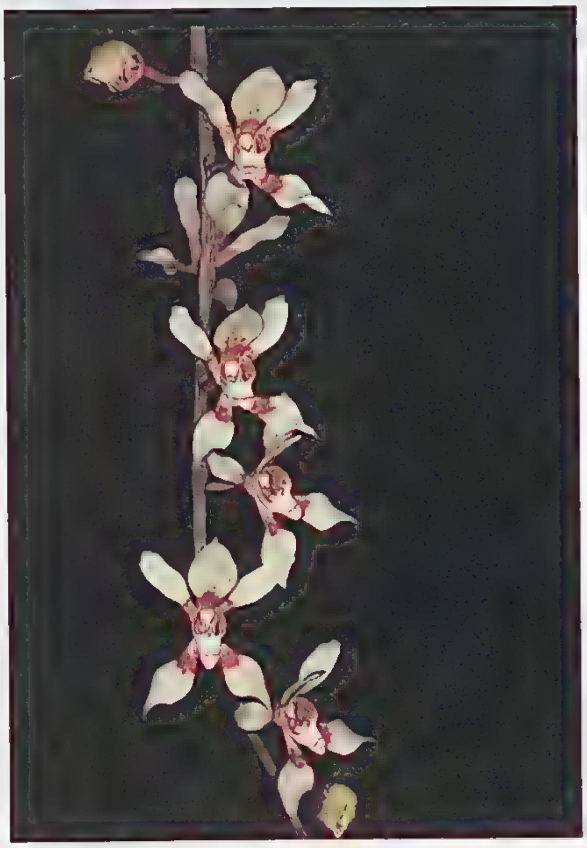


Figure 2: Sarcochilus Shooting Star (*S. fitzgeraldii* X *S. australis*). Owned by Mike Harrison, this was Champion Hybrid of the Show. It had 2 pendulous racemes of 250mm length. Flowers are like those of an oversized *S. australis.* Perhaps these would be better displayed if the plant had been grown and hung up in a slotted wooden 'basket' rather than a pot.

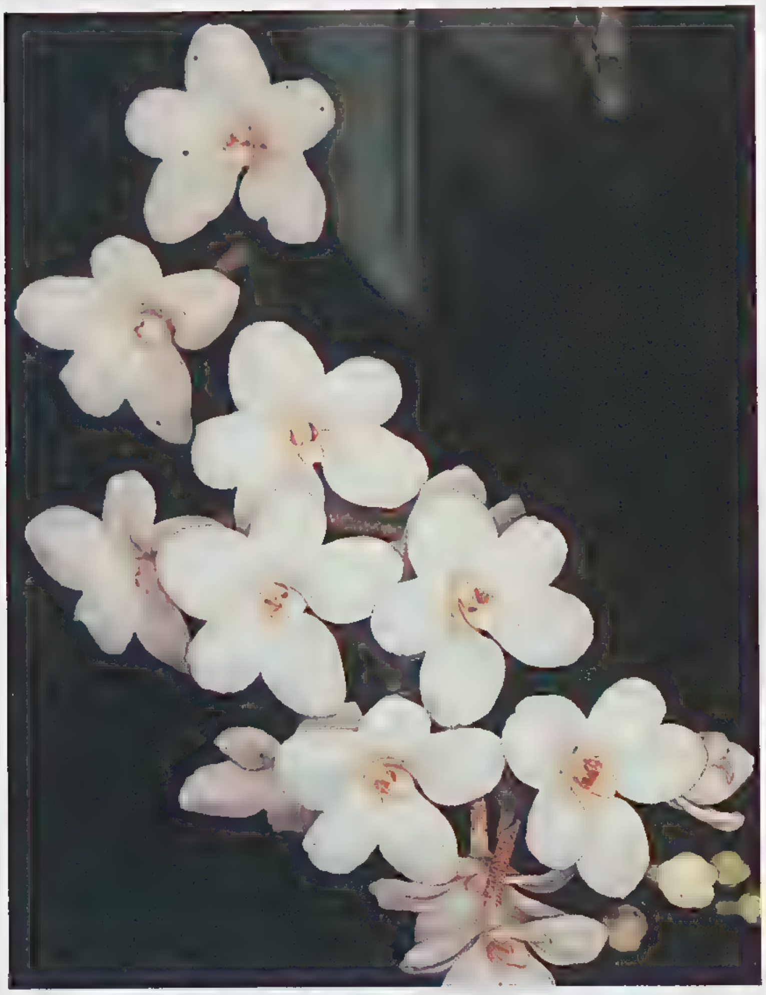


Figure 3: *Sarcochilus hartmannii.* Don Barnham's 'Blue Knob' form was First in the abundant class of the sarcanthinae. Don bought his plants as seedlings from flosks about 12 years ago. This prize-winning plant showed the ability of this species to form specimen plants comparatively quickly. **It was a big pot full of vitality confirming the policy of growing selected forms of species from seed** rather than hunting them down in the wild.

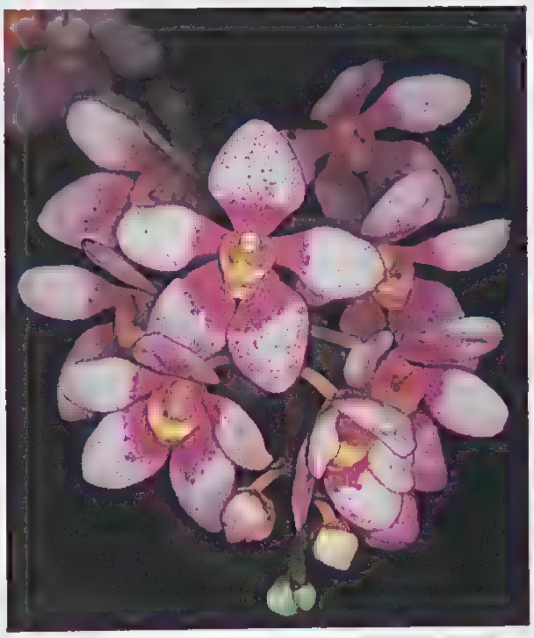


Figure 4: *Sarcochilus fitzgeraldii.*

All photographs by Garry Wells

NOTES ON THE CONTENTS OF JOHN LINDLEY'S ORCHID HERBARIUM

2 : ADENOCHILUS; ANOECTOCHILUS; APHYLLORCHIS; APOROSTYLIS; APOSTASIA; ARTHROCHILUS; BROMHEADIA AND *BURNETTIA*

by M.A. Clements

SUMMARY. The contents of 7 folders in John Lindley's orchid herbarium are described. Of these, only the *Adenochilus, Apostasia, Arthrochilus* and *Burnettia* folders contained specimens collected in Australia or New Zealand. A single specimen of *Aporostylis,* a New Zealand endemic genus, found in the *Caladenia* folder, is also described.

Introduction. The present series of papers, detailing the Australian and New Zealand contents of John Lindley's orchid herbarium at the Royal Botanic Gardens, Kew, will deal exclusively with terrestrial orchids in the collection.

The first paper in the series Clements (1983,b) dealt with the genus *Acianthus.* In this paper however, the contents of seven folders plus part of another will be described. Some of these contain but a single sheet, eg. *Adenochilus.* For the sake of conciseness genera accepted by Clements (1982) will be included in this survey even when no Australian collections have been located in the Lindley Herbarium. This is to indicate that the relevant folders have been searched for Australian or New Zealand taxa.

Methods. The methods used are the same as those described in the first paper in the series (Clements 1983,b).

Acknowledgements. This study was financially supported by the Sainsbury Trust through the Bentham-Moxon Trust at Kew. I wish to thank the Director of the Royal Botanic Gardens, Kew and the Keeper of the Herbarium, for permission to use the facilities at Kew, and in particular Phillip Cribb and Peter Taylor who have read and commented on this manuscript.

ADENOCHILUS J.D. Hook.
A. gracilis J.D. Hook.
—. (a) A colour painting of two plants, both of which were flowering when painted, and the side and front views of the lip and the position of the column relative to the lip. The painting lacks collection details.

ANOECTOCHILUS Blume
Note: None of the collections or species represented in this folder are attributable to the only Australian species, *A. yatesiae* Bailey.

APHYLLORCHIS Blume
Note: None of the collections in this folder are attributable to the currently accepted Australian species, *A. anomala* Dockr. and *A. queenslandica* Dockr.

APOROSTYLIS Rupp et Hatch
A. bifolia (J.D. Hook.) *Rupp et Hatch*
28. "Middle Island, New Zealand", *Lyall* (1 specimen) ISOTYPE.

Note: This specimen was located in the *Caladenia* folder the genus in which the species was first described.

APOSTASIA Blume
A. wallichii R.Br.
4. "Nookoli Napalae", *Wallich* 4448 (1 specimen). ISOTYPE.

Note: Type status of this specimen determined by E.F. de Vogel 3/1969.

5. "Damp forest towards Kujoo-doo (Assam)", (3 specimens).

Note: Determinavit slip on this sheet is signed by E.F. de Vogel dated 3/1969. Sheets numbered 1 to 3 in the *Apostasia* folder are of *A. nuda* R.Br. a species not represented in Australia.

BROMHEADIA Lindley
Note: There are 5 sheets in this folder but none are of Australian species although two of these, *B. finlaysoniana* Wallich ex Lindley and *B. palustris*? Lindley, a superfluous name for the former, have proved important in determining the status of the Australian species.

ARTHROCHILUS F. Muell.
A. irritabilis F. Muell.
1. "Brisbane River", [Queensland], *Hill and Mueller* (1 specimen). ISOTYPE?

Note: Marked in pencil below is a note "Frag. Phyto. Australia I. 43" in reference to the place of publication of this species.

BURNETTIA Lindley
B. cuneata Lindley
1. "Rocky Cape" [Tasmania], "Dec. 1837", [R.] *Gunn* 947 (1 specimen). HOLOTYPE.

References:

Clements, M.A. (1982). Preliminary Checklist of Australian Orchidaceae. National Botanic Gardens, Canberra.

Clements, M.A. (1983b) Notes on the content of John Lindley herbarium — I: Acianthus. *The Orchadian* 7:10, 241 (December, 1983)

c/o Royal Botanic Gardens,
Kew, Richmond,
Surrey TW9
3AB

September, 1983

A.N.O.S.
21st ANNIVERSARY WORKSHOP

A brochure and registration form is included with this issue of *The Orchadian.* Members are reminded that the workshop is limited to 150 registrants — so don't be too late in forwarding your completed registration form and fee to the Hon. Secretary.

Please phone (02) 99 2468 for any further enquiries.

As an added attraction there will be a display of watercolours of Australian native orchids by Mair Swann, who is now resident in Atherton, Qld. Mair for many years did freelance botanical art for the Royal Botanical Gardens at Kew. Much of her work was on orchids, although she is just as experienced with other plants. It is understood that there will be watercolours on display not seen at the Townsville Conference. The paintings will be on sale to interested purchasers.

ANOS GROUP REPORTS

The Wollongong and District Native Orchid Society (An A.N.O.S. Group Report)

• *"Falcatus Gully" at Rhododendron Park*

Some twelve months ago, the Wollongong and District Native Orchid Society was invited by the Rhododendron Society to establish Australian native orchids in the rainforest located in the upper section of the Rhododendron Park.

It is the aim of our Society to cultivate and preserve native orchids by re-establishing them in parks such as this, and therefore we are at the moment trying to collect such species that are in danger of extinction due to logging or clearing of rainforest areas.

The first planting was carried out by our members under the direction of the then President of our group, Mr Alex Beileiter. On inspection after some 8 months we found that 80% of the orchid varieties had taken and we were very happy with the result; so much so that we then embarked on a planned programme. A Committee was formed to map out the area with location points so that the progress and identification of the plants can be recorded. We are now in the progress of having tags made for each of these locations showing the names of the orchids.

Our planting is generally done in the form of a club picnic day at the park, so that all our members may participate in this project and at these outings we usually have a majority attendance.

The native orchids already established in the park from past visits are a large cluster of *Dendrobium kingianum* on a large rock in the top section together with *D. speciosum, D. linguiforme, D. striolatum, D. canaliculatum, D. aemulum, D. falcorostrum, D. gracillimum, Cymbidium suave, Plectorrhiza tridentata.* We have planted *Sarcochilus falcatus* on the trees in the southern creek area and have named this "Falcatus Gully". In addition, we have established assorted ferns, stags and elkhorns to enhance the rainforest area.

Although it is early days yet, our members feel that this area will be a real showpiece, so that the Australian Native orchids can be seen in a natural environment.

Dorothy E. Gillis
23 January, 1984. Hon. Secretary

Note: The Rhododendron Park is situated in Parish Avenue, Mt Pleasant via Wollongong and, being a private park, it is only open on the availability of members to attend the gate. Arrangements to visit can be made by contacting Mr Clyde Smith of the Rhododendron Society Phone (042) 292 521. **—Editor**

• Wollongong Group and Colour for *The Orchadian*

Although we have had nothing but praise, in casual comments, for our first use of colour illustrations (December, 1983) we were delighted to get a letter from the Hon. Secretary, Wollongong and District Group, expressing the Group's appreciation and enclosing a generous donation of $100 for *The Orchadian* Colour Fund.

A.N.O.S. is extremely grateful to this active Group for the swiftness of its practical responses both in the field (in conservation matters) and in the management problems of A.N.O.S. and its journal.

There is no "beating about the bush". ED.

From Western Australia

The December 1983 issue of the WA Native Orchid Study and Conservation Group's official bulletin contains a number of items that will interest *The Orchadian's* readers.

Professor Warren Stoutamire of USA addressed the Group's November meeting on his latest study in WA on wasp pollination of terrestrial orchids — particularly in the genus *Drakaea*. He asked that any members, either in WA or in the eastern states of Australia, who may have photographs of any pollination of terrestrial orchids might supply him with copies — writing to him C/- the WA Herbarium, George Street, South Perth, WA, Australia. Professor Stoutamire is a member of A.N.O.S.; so we hope to have some data from him, in due course, in *The Orchadian* (see Vol 6, pp45, 110-111, 126-129, for his report to the AOF 1978 and two articles reprinted from the A. O.S. Bulletin).

Dr Stephen Hopper is reported to have completed the naming of new *Drakaea* varieties and to have investigated *Caladenia heugelii* and split this species into a number of varieties. These revisions have not yet been published (see also Stephen Hopper's request p. 265).

Andrew Brown and Noel Hoffman have published a book, "Orchids of South-West Australia". Readers may wish to contact Mrs Gordon, 18 Kellar Way, Thornlie; WA for special prices ($30 linen and $21 soft cover) offered by the W.A.N.O.S.C.G. to its Group members. We have not yet had the opportunity to see this book. **(Published by University of WA Press.) Following is an extract from the publisher's brochure:**

"Orchids of South-West Australia"

A new book by Noel Hoffman and Andrew Brown

The main purpose of this book is to provide an easy means of identification of the native orchids of South Western Australia. This has long proved a major source of frustration to the individual who has had to rely upon interpretation of technical descriptions, there being too few illustrations available.

Confusion has also existed concerning the classification of some species. Some have been named on three or more occasions, and others, such as the *Pterostylis rufa* group, have been placed with eastern States species even though they do not quite match them. Increased interest in orchids has led to the recent discovery of at least twenty new species, and no doubt others will be found. Many of the original specimens collected were retained in herbaria in Europe, making access to the records difficult. Some records have been lost and in some cases specimens have been badly damaged. This situation has made it difficult for not only the amateur but also the professional botanist to identify specimens and to draw up a complete list of Western Australian orchids.

This book attempts to overcome many of these problems and amateurs should be able to easily identify the majority of their specimens. The pictorial key will direct attention to the section of the book containing the orchid to be identified or studied. Attention will be drawn to the main features of identification, conditions of growth, location, flowering dates and common names. It will also be noted that where species are similar in form they have been arranged in colour from white through yellow to red, blue and green.

Dendrobium pugioniforme x *D. striolatum*

— More Notes on the Natural Hybrid

by David Banks

It is a mystery why this orchid had not been recorded in a major publication until Neil Finch's article appeared in the December *Orchadian.*

Since that article two more clones of this hybrid have been brought to my attention. The first of these was collected at Mt Irvine in the Blue Mountains by Bob Stephens while bushwalking in the area. It was found growing on sandstone with *D. striolatum. D. pugioniforme* grew close-by on trees. Obviously the same pollinating agent is responsible for the pollination of both these species. The plant, however, differed from the clones collected by Neil Finch. It favoured *D. pugioniforme more with thicker, shorter leaves than those of the other recorded hybrids. The flower was singular and 28 mm in diameter, brownish-green colour with the D. pugioniforme* colouration on the labellum.

The second 'new' clone is one found by Vern Frampton of Yattalunga on the Central Coast of N.S.W. — a personal friend of mine and a member of A.N.O.S. Central Coast Group. Mr Frampton found his plant in the Wattagan Mountains, north of Gosford N.S.W. — again on sandstone intermingled with both *D. striolatum* and *D. pugioniforme.* The hybrid, because of its size (over a metre in diameter) must be a few years old. The plant, vegetatively, is almost identical to Mr Finch's as shown on the cover of the December, 1983 *Orchadian.* However I haven't seen the flower on this clone as it was collected after the flowering season, but should bloom next season for me.

Cultivation

The five clones of this hybrid which I own have proved to be quite amenable to cultivation. While I grow my plants of *D. striolatum* and *D. pugioniforme* on slabs, I grow the hybrid in terracotta pots in a mixture of 50/50 river gravel and pine bark. The pots are then hung up on wire mesh, under 50% sarlon shadecloth and watered frequently. As the plants produce at least two crops of new growths a year a good specimen plant builds up quite quickly. Being in a pot the leaves and stems start to cascade over the side of the pot and make an attractive display when in flower.

The hybrid sends out aerial roots along its slender branched stem. A good way to propagate the hybrid is to tie some sphagnum moss around the roots with a tiny piece of either pantyhose or paperbark. If this is done in spring/summer the roots will become very active after six to eight weeks. Then the stem can be cut and a new plant is thus added to your collection (or someone else's). So it will not be too long before a number of native orchid enthusiasts have this plant in their collection. Mr Finch's plant has already been distributed to a number of members of A.N.O.S. Sydney Group — ensuring that the hybrid will not be lost.

Conclusion

Despite the fact that a number of clones of this hybrid have been found I personally don't believe it should be given a botanical name. Most of the natural hybrids with botanical names (eg. *D. x delicatum*) were named because, at the time, they were thought to be new species — not hybrids. When they were found to be hybrids, they were generally given the same name; the only difference being that a large X was placed in front of the specific name to denote a natural hybrid. So why do we want to give this 'new' natural hybrid a botanical name of its own? The only real advantage of it that I can see is a shorter name to write on our plant labels.

While on the subject of natural hybrids it might be worth mentioning two hybrids which have come to light of late. The first being a natural hybrid between *Sarcochilus hartmannii* and *S. fitzgeraldii* which I found in the Numinbah Valley in southern Queensland while bushwalking with John Roberts. The plant was not in flower and growing with both its presumed parents. Vegetatively it was like a very robust *S. fitzgeraldii.* The flower is similar to the early man-made S. Fitzhart hybrids.

The other putative hybrid is *Diuris aurea x D. punctata.* About 20 clones of this hybrid were found in this swarm. An article will be prepared later in the year on this hybrid.

It thus appears that natural hybrids among our native orchids are not as rare as might be thought. However it is mostly epiphytes that take preference and more recognition than our terrestrials*. Perhaps information on terrestrial hybrids could be put together either through *The Orchadian* or a Checklist. Ron Heberle has done a lot of fine work sorting out Western Australian *Caladenia* hybrids but little has been done with the genera *Diuris* and *Pterostylis.*

Acknowledgements

The author would like to thank Vern Frampton, Bob Stephens, Stuart Penman and Neil Finch for information and living material of the *D. striolatum* x *D. pugioniforme* natural hybrid.

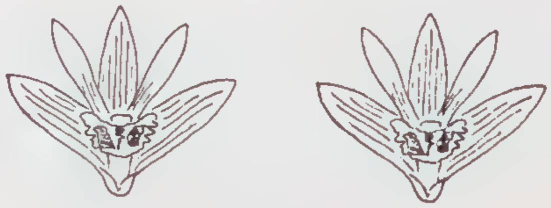
183 Windsor Rd.,
Northmead 2152
New South Wales

February, 1984

Footnote

*This impression may have been gained from "A Checklist of Australian Native Orchid Hybrids" published by A.N.O.S. The "Checklist" makes the point (p. 8) that "terrestrial hybrids have been omitted from this list because of their extreme complexity". The compilers of the first edition, realised that *so many* putative terrestrial hybrids had been reported both formally and informally over many years, and that the task of compiling a full list of terrestrial hybrids would unduly defer achievement of their main purpose — which was to produce a complete list of *registered* Australian native orchid hybrids. Perhaps a special checklist of terrestrial hybrids could be prepared from back issues of *The Orchadian* and from Herbarium publications in the various States carrying descriptions such as those of Bates and Weber (see *Orchadian* December, 1983 pp 234-5) and many others. Hearsay reports would not be sufficient for a reliable listing.

— Editor



Dendrobium pugioniforme
x *D. striolatum* (Nat. hybrid)
drawing: Neil Finch

LETTERS TO THE EDITOR

Dear Sir,

For some twenty years I have had an amateur interest in the Australian orchids although only in the last six years has this been anything more than very casual. In those six years I have attempted to track down all the literature available on our native orchids. What I have discovered is that very little serious research has been done on most aspects of Australian orchids.

Most of the research has been done by non-botanists i.e. Fitzgerald, Rupp, Rogers and Nicholls and only occasionally have professionals dabbled briefly in orchid studies.

Recently there have been several major developments as an upsurge in orchid interest occurs. Native orchid groups are being formed in all States and some 80% of our native orchids are now in cultivation. Mark Clements has published the much needed "Preliminary Checklist of Australian Orchidaceae"; J.H. Warcup has investigated mycorrhizal relationships and pioneered the symbiotic germination of orchid seed in flasks; Warren Stoutamire and David Jones have made detailed studies of pollination syndromes in a few genera; Ron Heberle has shown the way with his investigation of natural *Caladenia* hybrids and the Phytogeography of the Orchidaceae of Western and South Australia has been written up by Keighery, Markwick and Bates. However, all the above investigations must be regarded as still in the preliminary stage and there are aspects of orchid studies not even touched on in Australia. I list below several areas where study of our orchids has been lacking.

Taxonomy: No Australian orchid genus has ever been completely revised. In this our study of the Orchidaceae is well behind most other Australian plant families. The piecemeal work or the past has often been confusing and even conflicting.

Cytology: There have been negligible chromosome counts made for Australian orchids and most of these have been done by overseas workers.

Pollination: Some genera have been intensively studied but in many of our larger genera i.e. *Pterostylis* we do not even know the methods used to attract pollen vectors.

Phytogeography: Although much has been done in South Australia and Western Australia and to a lesser degree in Victoria practically nothing has been done on this subject in other States.

Hybrid studies: Very few putative natural hybrids have been studied and even fewer named hybrids have been verified as such.

Other general areas requiring study include chemistry (i.e. of orchid perfumes), evolution, morphology (of seeds etc.) and perhaps most important of all, conservation. We do not know the answers to such questions as — "Why are some orchids stimulated to flower after bushfires?", "Are Corybas species really fungus mimics?", "Do any of our orchids have useful medical properties?" or "Is *Arthrochilus huntianus* an annual?"

Is anything being done? Fortunately, yes. Mark Clements has been investigating the type collections of Australian orchids which are held in Europe. This should help to clear up a lot of problems with mis-applied names. Revisions should soon be published for *Microtis* and the Micranthum section prasophylls, and Steven Hopper is currently revising *Drakea* and the western Caladenias. Andrew Brown and Noel Hoffmann have produced a comprehensive book on the Western Australian orchids — something long needed. Brian Molloy in Christchurch is currently engaged in cytological studies of orchids common to Australia and New Zealand. Warren Stoutamire and David Beardsell are continuing studies of orchid pollination, Warcup and Clements are extending investigations into the specificity of orchids with their fungal endophytes; and Kingsley Dixon has made extensive studies of the underground orchid *Rhizanthella*.

This is just a sample of what is being done. There are many more workers, such as the growers who are making breakthroughs in cultivation of difficult species and hybrids. There are the field naturalists and collectors, the photographers, others producing books, professional botanists working on taxonomy for the 'Australian Flora' and there are the conservationists and, of course, editors. All of them needing encouragement and support. There have been too many willing workers in the past who have been criticised over their first publications and become disheartened. Others have given up due to lack of recognition of what they were doing. Let us all give encouragement and assistance where we can to those who are prepared to give of their time, that we may know much more about the mysteries of our Australian orchids.

Yours faithfully,
R.J. Bates

Sir,

I am researching the *Pterostylis pedunculata — Pt. erecta* group and would appreciate any pickled specimens, with details of date of collection, name and address of collector. All correspondence will be answered and acknowledgement made should results be published.

Yours faithfully,
Lex Barton
34 Duncan St.,
Riverview, Qld. 4305

9 March, 1984

Request for Loan of Slides of Eastern States Spider Orchids

I wonder if members of the W.A.N.O.S.C.G. and of eastern states orchid clubs could help with the following request?

I am currently engaged in a revision of W.A. members of the genus *Caladenia*. It's become apparent that I need to know more about eastern states species before drawing firm conclusions about those in W.A. For example, careful comparisons of eastern and western members of the *C. patersonii, C. filamentosa, C. huegelii* and *C. longiclavata* groups are needed.

Whilst I have been able to see and borrow a good range of herbarium material of eastern states *Caladenia*, this is no substitute for seeing fresh specimens or slides/photographs of the same. I am seeking assistance from anyone interested in lending a selection of slides of eastern states *Caladenia* to me to examine and duplicate for further study.

Specifically, I am seeking a few examples of each eastern species (especially South Australia, Victorian and Tasmanian) that show normal specimens and major common variants. In variable groups such as *C. patersonii* and *C. filamentosa*, several slides would be most welcome. It would help if the location date and species name were provided on each slide.

Any assistance received will be acknowledged in the published revision. I would appreciate eastern affiliated groups of N.O.S.A. publishing this request in their newsletters if space allows.

Stephen Hopper,
W.A. Wildlife Research Centre,
P.O. Box 51, Wanneroo W.A. 6065

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the R.H.S. since August, 1983 — from lists in the Orchid Review of January and February, 1984)

NAME	PARENTAGE	REGISTERED BY
DENDROBIUM		
Camp Island	Peter Petersen x *undulatum* (i.e. *discolor*)	K.A. MacPherson
Cherry Dance	*bigibbum* x Mini Pearl	T. Nagasaka
Dryander Mountain	Gloucester Sands x *undulatum* (i.e. *discolor*)	K.A. MacPherson
Barnard	Wyuna x Eureka	C.J. Brandon
Carawah	Sunglow x Star of Gold	C.J. Brandon
Cawongla	*kingianum* x Suffusum	C.J. Brandon
Duke	Judy Leroy x *tetragonum*	W.T. Upton
Ira Butler	Hilda Poxon x *ruppianum*	W.T. Upton
Jiggi	*beckleri* x *teretifolium*	C.J. Brandon
Karani	*monophyllum*† x *kingianum*	C.J. Brandon
Nooro	Eureka x *falcorostrum*	C.J. Brandon
Orana	*adae* x *monophyllum*	W.T. Upton
Tooloom	*adae* x *kingianum*	C.J. Brandon
Tweed	Peter x Sunglow	C.J. Brandon
Wyuna	*fleckeri* x Ella Victoria Leaney	C.J. Brandon
SARCOCHILUS		
Jewell	*fitzgeraldii* x Weinhart	K.W. Russel
Marion	Fitzhart x *olivaceus*	W.T. Upton
Pinkhart	Lois x *hartmannii*	K.W. Russell

†This symbol marks the first occurrence of *D. monophyllum* as a parent in hybrid registration.

ADVANCE INFORMATION

Other registrations were approved by the R.H.S. during January and February, 1984, but had not yet been published at the time of going to press. The following information has been supplied by Mr W.T. Upton regarding six new hybrids registered by him and approved on the dates shown:

NAME	PARENTAGE	DATE APPROVED
DENDROBIUM		
Twinkle	Penny Ann x *falcorostrum*	2/1/84
Red Baron	Blushing Rose x *kingianum*	2/1/84
Pixie	Ellen x *Xsuffusum*	2/1/84
Goblin	Emmy x Ellen	2/1/84
Fairy Floss	Penny Ann x *tetragonum*	2/1/84
Fiesta	Colin x Kim	16/2/84

Colour slides of Mr Upton's most recent hybrids show a range of colours and shapes that indicate considerable progress. It is clear that we must have a review article, with colour pictures, in *The Orchadian*, possibly in next September's issue. My preview suggests that an up-to-date coverage would include, at least, D. Red Baron, D. Fiesta, D. Ira Butler and D. Orana.

That progress is speeding up, in this field, is indicated not only by the record number of registrations above but also by the new names among the hybridists (C.J. Brandon and K.W. Russell). An up-to-date new edition of our "checklist" seems necessary later this year.

We hope to publish in *The Orchadian*, shortly, a review by David Banks of progress achieved in Hybridising *Sarcochilus* species. Meanwhile David has contributed the following notes:

Notes on New Native Orchid Hybrids Recently Registered

by David Banks

Dendrobium Essie Banks

This is a hybrid between D. Hilda Poxon 'Northmead' and *D. speciosum* var *speciosum*. The main object of making this hybrid was to produce a D. Hilda Poxon type with more flowers on the spike and for the flowers to last longer. D. Essie Banks proved that this is a hybrid to be reckoned with. The first clone flowered four and a half years out of flask. This length of time is due to the 'double dose' of *D. speciosum* in its background. On first flowering (September 1982) the plant produced 32 star-shaped yellow flowers with faint spotting and with the typical *D. speciosum* markings on a somewhat flattened labellum.

Dendrobium Lynette Banks

This hybrid between D. Eureka 'Winston Hills' and *D. speciosum* var *speciosum* 'Valley Devil'' was named after my mother. This cross was made with the thought of good shaped yellow/apricot flowers in mind. The *D. speciosum* would also improve the numbers of flowers on the spike. Again my wishes were granted when the first seedling bloomed in late August 1982. 15 golden flowers were produced on an arching raceme, the shape and texture being very good. Again a very strong grower like D. Essie Banks. I have remade this hybrid using a good white *D. speciosum* from the Wattagan Mountains but it will be another few years before the seedlings flower.

Sarcochilus Pinkart

This hybrid between *S. hartmannii* and S. Lois is a cross recently registered by Ken Russell of Dungog. The flower is like a large *S. hartmannii* but a pale pink. Its only main fault is that the flower is rather "open" and slightly "cuppy". However further breeding could rectify these faults. The plant habit is much like *S. hartmannii* and has a purple tinge to the foliage due to the *S. ceciliae* in its background. One pleasing attribute is that Mr Russell's plant blooms over a couple of months. It is an imposing plant and should become popular in collections as soon as division/seedlings become available.

IRA BUTLER AWARDS FOR 1983

Although we have as yet no official advice from the Ira Butler Committee (nominees of A.N.O.S. and the O.S. of N.S.W.) we can report the following awards:

Native Hybrid of the Year

Dendrobium Star of Gold owned by F. and I. Chapman of the Central Coast Group of A.N.O.S. (We published a colour photograph of this hybrid in *The Orchadian*, December, 1983, P. 237, as Champion Native Hybrid at the 9th Annual Spring Show of A.N.O.S. at Mona Vale. We were not then aware of its Ira Butler award.)

Award of Special Recognition *(for hybridists)*

Two well-known hybridists received this award, which is not of course an annual event. (It was last conferred, some years ago, to Walter Upton and Roger Bedford.) The latest awards went to

Mr and Mrs Noel Jupp and
Mr Phillip Spence

We venture to hope that, in the fullness of time, the Ira Butler Committee will issue a report to its principals, donors and the public generally, on what has been achieved over the years. We should be glad to publish such a report — especially against the present background of new developments in hybridising Australian Native orchids.

Errata — we apologise for a typrographical error on page 260, due to earlier printing of the column section. The last line of the paragraph headed Papua New Guinea should read:
BO. CBG. E.K.L. LAE, NSW (UPNG)

— AW.

A CHECKLIST OF AUSTRALIAN NATIVE ORCHIDS HYBRIDS

Second Edition — September 1981

This revised edition is now available from the Secretary, ANOS, P.O. Box C106, Clarence St., Sydney. N.S.W. 2000 at $1.50 per copy (postage included).

It is an essential handbook in 16 pages for those interested in breeding native hybrids. Recognised natural epiphytic hybrids are also included.

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Mackay and District Orchid Society

This Queensland society has made a generous donation ($50) towards the cost of printing the consolidated Index to Vol's 1—5 of *The Orchadian*. The M.D.O.S., apart from the usual interests of an exotic orchid society, has in its constitution provisions for "the preservation of orchids in their natural habitats ... prevention of vandalism ... and the listing of native orchids of the Mackay District". A local Native Orchid Society is affiliated with M.D.O.S. and most members of the former belong to both societies. A foundation member, Mr Rob Ebner, has sent us the notes presented below about the native species of the district. The Hon Secretary, Estelle Baldock says that members are very interested in *The Orchadian* for its articles describing species from New Guinea and the Pacific Islands.

The President of M.D.O.S., Mrs Marj Purnell, has a particular interest in New Guinea dendrobiums of the section Spatulata (Ceratobium) and in "selfing" the hard-to-obtain species and using them in hybridising with the local hardy *Dendrobium discolor*. She would like *The Orchadian* to present a series of descriptive articles with illustrations of Australasian Spatulata species which have been used, in the past, by hybridists but are seldom seen in present-day collections eg. "*D. lineale, tangerinum, antennatum, tokai lasianthera*, etc." Preliminary keys have been published in *The Orchadian* in recent years by Dr P.J. Cribb, but line drawings of the plants and flowers are what Mrs Purnell is suggesting "to enable growers to recognise them and, more importantly, for judging classes to know the species and be able to judge their hybrids more fairly". We shall respond readily to this request if a knowledgeable writer will volunteer to undertake such a worthwhile series.

—Editor

A General Guide to Native Orchids of the Mackay Region.

by Rob Ebner

The southern area of this region includes the Sarina Range and the Koumala Range which is in open forest country. Annual rainfall of 1819 mm is experienced in the Sarina township at the foothills of this range. This open forest country extends to Mackay, about 60 km by road. Mackay has an annual rainfall of 1666 mm. West of Mackay is the driest area, around Eton, which is 31 km away and has open forest and an annual average rainfall of 1359 mm. Behind this, the Eton Range has a small portion of rain forest with Tulip Oak scattered through its undergrowth.

North-west of Mackay travelling up the Pioneer Valley to the Eungella Range, the country is settled and cane farms predominate for 60 km and annual rainfall is 1460 mm at Mirani. At Pinnacle, 51 km from Mackay, the country changes to open forest and at the foothills of Eungella, Finch Hatton has an average annual rainfall of 1623 mm.

The climb to Eungella township is steep and twisted amongst rain forest, except where farm lands are settled and small townships exist. Dalrymple Heights has the highest rainfall of 2240 mm yearly average. From Eungella township west to Broken River the rain forest is dense but this changes between Broken River and the Eungella Dam to become open forest. The rainfall here is reduced considerably.
rain forest extends to Bee Creek and Eastwards to Massey Gorge.

From Mackay north sugar farmlands predominate. On spurs from the Clark Ranges such as Mt Charlton rain forest extends and, further north, is the Cathu National Park. This park and Mt Blackwood National Park require special permission to enter.

On the coastal region, 25 km north of Mackay, we turn to Seaforth and open forest with only small portions of rain forest. Near to Seaforth, a southern direction brings us to Ball Bay and Cape Hillsborough National Park.

The orchids found in these habitats belong to all three modes of growth: apiphytic, lithophytic and terrestrial.

Orchids in the highland areas include the following Dendrobium species *D. ruppianum*, *D. speciosum* var *hillii*, *D. teretifolium* and var. *aureum*, *D. gracilicaule*, *D. tetragonum* var. *hayesianum*, *D. lingulforme*, *D. schneiderae* var. *major* is found only in the Clark Ranges although the species *schneiderae* is found in other areas of Southern Queensland.

Among the Bulbophyllums are the species *B. newportii* (syn. *B. kirkwoodiae*) *B. aurantiacum*, *B. macphersonii* and *B. radicans*. *Eria inornata* and *Liparis nugentae* are among other genera found in these highlands along with *Oberonia palmicola*.

Terrestrials in the highlands include these genera: *Calanthe triplicata*, *Thelymitra pauciflora*, *Pterostylis baptistii*, *P. nutans* and *P. ophioglossa* var. *collina*. *Epipogium roseum* has had two sightings only, of which the first was made in 1971, on December 12th. This was photographed as a record of its discovery and it has been shown at a World Orchid Conference. The second discovery was in January, 1972 at another spot close to the first, in the Eungella section of the Clark Range. This plant is never to be removed from its natural environment, for its removal means its destruction. It will not survive in bush-house cultivation. Another genus *Galeola foliata* is spring flowering and it also must remain in its natural environment for survival

In the lowlands the rainfall is lower and the temperature at night does not fall to the low levels expected in the highlands, although it can fall to around 3° to 7° in winter, for limited periods.

Dendrobium, again, is the predominant genus and among the species found are *D. Xgracillimum*, *D. mortii* and *D. discolor*. *D. discolor* var. *broomfieldii* grows widely in the coastal areas and adjacent islands. *D. canaliculatum*, *D. tetragonum* var. *giganteum* and var. *tetragonum* are found easily in the Marani to Calen areas. *Saccolabiopsis armitii* is found closer to Mackay. *Sarcochilus ceciliae* likes the drier areas of the region and, being lithophytic, is found around Mt Jukes and beyond the Eungella Dam.

The highlands species is *S. olivaceus* and this is found around the Eungella rain forest hanging over creeks. Another epiphyte, mainly in the Sunnyside area of the lowlands is *Peristeranthus hillii*.

Terrestrials for the lowlands include *Eulophia venosa* which can be found around Mirani and *Nervilia discolor*, at Ball Bay along with *Prasophyllum* species.

39 Forgan St.,
North Mackay
Qld.4740.

February, 1984

A SERVICE TO READERS OF *THE ORCHADIAN*

Have you any particular needs relating to the orchid-growing hobby — books, equipment, plants etc. — or things you would like to exchange or dispose of? ANOS Council has decided to make space available for brief "Classified Ads" in *The Orchadian* each quarter.

(Reprinted from the NOSSA Journal of August 1983)

POLLINATION OF CALADENIA: AN OVERVIEW

by R. Bates

A great deal of research has been done on the pollination of Caladenia, the "spider orchids", since O. Sargent (1907) noted that the labellum of *C. barbarossa* was apparently decorated with a copy of a female wasp. Standards of "morality" at the time probably prevented him from stating outright that the orchids used sexual attraction to entice their male wasp pollinators.

Edith Coleman who had been the first to seriously discuss the pollination of *Cryptostylis* by pseudo-copulating male wasps noted in 1930 that *C. barbarossa* and *C. dilatata* seemed to use sexual lures to attract male wasps. It now seems likely that many Caladenias are pollinated by male wasps which are lured by phero-hormones, those volatile chemicals used by female insects to attract their mates and copied by the orchids. Not all Caladenias use this method. The colourful Caladenias of the section *Eucaladenia* are pollinated mainly by bees.

Caladenia species have a very simple column structure without viscidium (no viscid disk or caudicle) and the rostellum is hardly developed. The pollinia are loosely held within the anther by moveable flaps which allow easy upward removal upon contact with a sticky surface such as the head or thorax of an insect which has previously brushed against the sticky stigma of the flower. The column is generally winged and these wings help to position the pollination agent. There are two yellow glands at the base of the column in many spider orchids of the section *Calonema*. These probably produce the attractant chemicals (phero-hormone or otherwise) as they will attract male wasps when removed from the flower and crushed and are most pronounced in wasp-pollinated species. These two yellow glands may also act as pseudo-pollinia to lead pollen-eating insects away from the true pollinia.

There are two basic types of pollinating syndrome in *Caladenia*. In the bee-pollinated species the labellum has definite side lobes which form a tube with the column to ensure that the insects are correctly positioned to receive the pollinia. Rogers (1931) described the pollination of the blue *C. deformis* by a bee, *Halictus subinclinans*. (This was brought to his attention by Harold Goldsack, who has now spent over 50 years studying our South Australian orchids.) The dense mass of calli on the labellum of *C. deformis* was observed to afford a foothold to allow the bee to push into the space between column and labellum as it took some pressure to widen the "tube" enough to permit entry. The bee pollinated species are usually brightly coloured: blue in *C. caerulea*, pink in *C. catenata*, white in *C. alba* and yellow in *C. flava* for example. Some species in this group are fragrant (eg. *C. gracilis, C. deformis* and *C. catenata* var *gigantea)* but no nectar is offered. Perhaps there is some degree of mimicry of other wild flowers which offer nectar and pollen. However, all of the bees I have collected on *Eucaladenia* flowers were male and in some cases (eg. *C. congesta*) were seen to clasp the labellum and either shake it vigorously or exhibit probing movements of the abdomen.

In the wasp-pollinated species the labellum is on a hinged claw and moves backward and forward with the shift in weight provided by the visiting insect. Stoutamire (1975) described the pollination (pseudo-copulation by male thynnid wasps) of Western Australian species with hinged labella. Excellent photographs of this process in *C. cairnsiana, C. barbarossa* and *C. lobata* accompany his paper. Cady and Rotherham (1970, plate 50) illustrate the "common spider" *C. dilatata* and its thynnid wasp pollinator.

The labellum has many features to assist in positioning the pollen vectors in Caladenias: there are often veins and lines (*C. reticulata, C. cardiochila*) which guide the insect toward the column. Calli may imitate the body of a female wasp or at least that feature of her body which acts as a sexual stimulus to the male wasp. The rows of calli down the centre of the labellum ensure that the insect is centrally positioned to receive the pollinia correctly. Other species (*C. cairnsiana*) have a ridge of tissue near the tip of the labellum which gives the insect something to push against, others have fringed side lobes which prevent the insect entering from any angle other than the front. Rica Erickson (1960) noted that the large sentinel calli of *C. flava* prevent insects which are too small from entering. The taller calli nearest the column also serve to lift the insect up to the correct height to contact stigma and pollinia. In areas where the local race of pollen vector has large males these calli may be short; where the wasps are small the calli may be large. Insects such as blowflies, which are too large, often become trapped when the labellum tilts back against the column and without a favourable breeze to tilt it back they may die there. Finding dead flies in the flowers often gives the wrong impression that the orchids "eat" flies. An article by the author (1978) is misleading in that the word "insect" has been mischievously replaced throughout by the word "fly". I have observed flies successfully transfer pollinia in *C. patersonii* but this is an exception and not the rule. Uhlherr (1967) suggests the possibility of *C. alba* being pollinated by a fly. References to beetles pollinating Caladenias can probably be disregarded.

Perfume in Caladenias is produced by glands on the outer side of the sepals as in *C. gracilis* with its musky odour or in the glandular tips of the sepals and petals as in some forms of *C. patersonii* which has fragrances ranging from citronella through gardenia and to the spicy musk which is at its strongest in *C. gladiolata* As mentioned previously colour is an attractant in bee-pollinated species but those *Caladenias* which attract wasps are generally not so brightly coloured and greens, maroon, pale yellows, brown and off-white predominate with the same colour patterns quite often repeated by not so closely related species (a topic on which I will later write in detail). Nectar is usually absent. Other attractants include vibration of the labellum as in *C. congesta* (Bates 1982).

Many species have self-pollinated forms (Bates 1980); and Hatch (1952) notes that *C. catenata* var *minor* is either autogamous or cleistogamous in New Zealand. (The Australian plants of this variety are also self-pollinated although the type variety is bee-pollinated.) Some forms of *C. bicalliata* are also cleistogamous, the flowers never opening.

The stems of most Caladenias are beset with long slender stiff hairs at right angles to the stem and these are thought to prevent ants reaching the flowers and damaging the stigma or pollinia.

Despite the continuing research very few Caladenias have had their pollination syndromes studied in detail and in South Australia only about 25% of species have had their pollen vector collected. There is much scope for the casual observer to contribute with notes on observations and or captured pollinators.

References:

Bates, R. (1978, 1980, 1982), "Pollination of Orchids", parts 7, 9 and 16, *Journal, Native Orchid Society of South Australia.*

Cady, L. and Rotherham, E.R. (1970), "Australian Native Orchids in Colour", p. 56-60, (Sydney).

Coleman, E. (1930), "Pollination of Some W. Aust. Orchids", *Vic. Naturalist*, 46: 203-206.

Curtis, R.J. (1964), "The Pollination of Orchids". *Orchadian, 1:72-74.*

Erickson, R. (1960), "Orchids of the West" (Perth).

Hatch, E. (1952), "New Zealand Caladenias", Trans. R. Soc. New Zealand. 77:398-402.

Rogers, R.S. (1931), "Pollination of *Caladenia deformis*". *Trans. R. Soc. S. Aust.* 55:143.

Sargent, O.H. (1907), "Pollination of *C. barbarossa*". *Journal, West. Aust. Nat. Hist. Soc.* 4:1-7 (1907).

Stoutamire, W.P. (1975), "Australian Terrestrial Orchids; Thynnid Wasps and Pseudo-copulation". *Amer. Orch. Soc. Bulletin.* 44:226-233. (and in *The Orchadian* Vol 6:110-111).

Uhlherr, P.J. (1967), "Pollination of *Caladenia alba* — a note on". *Orchadian.* 2:94-95.

38 Portmarnock St.,
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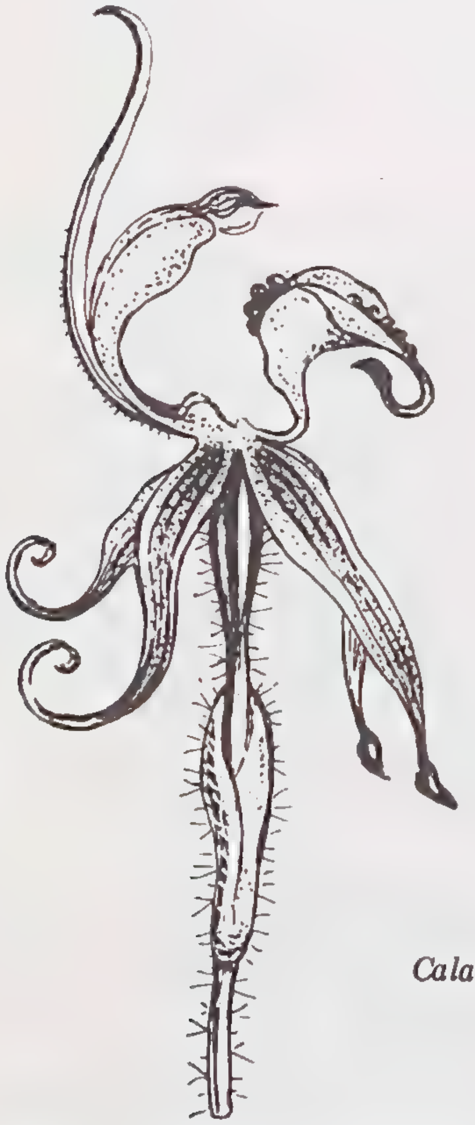
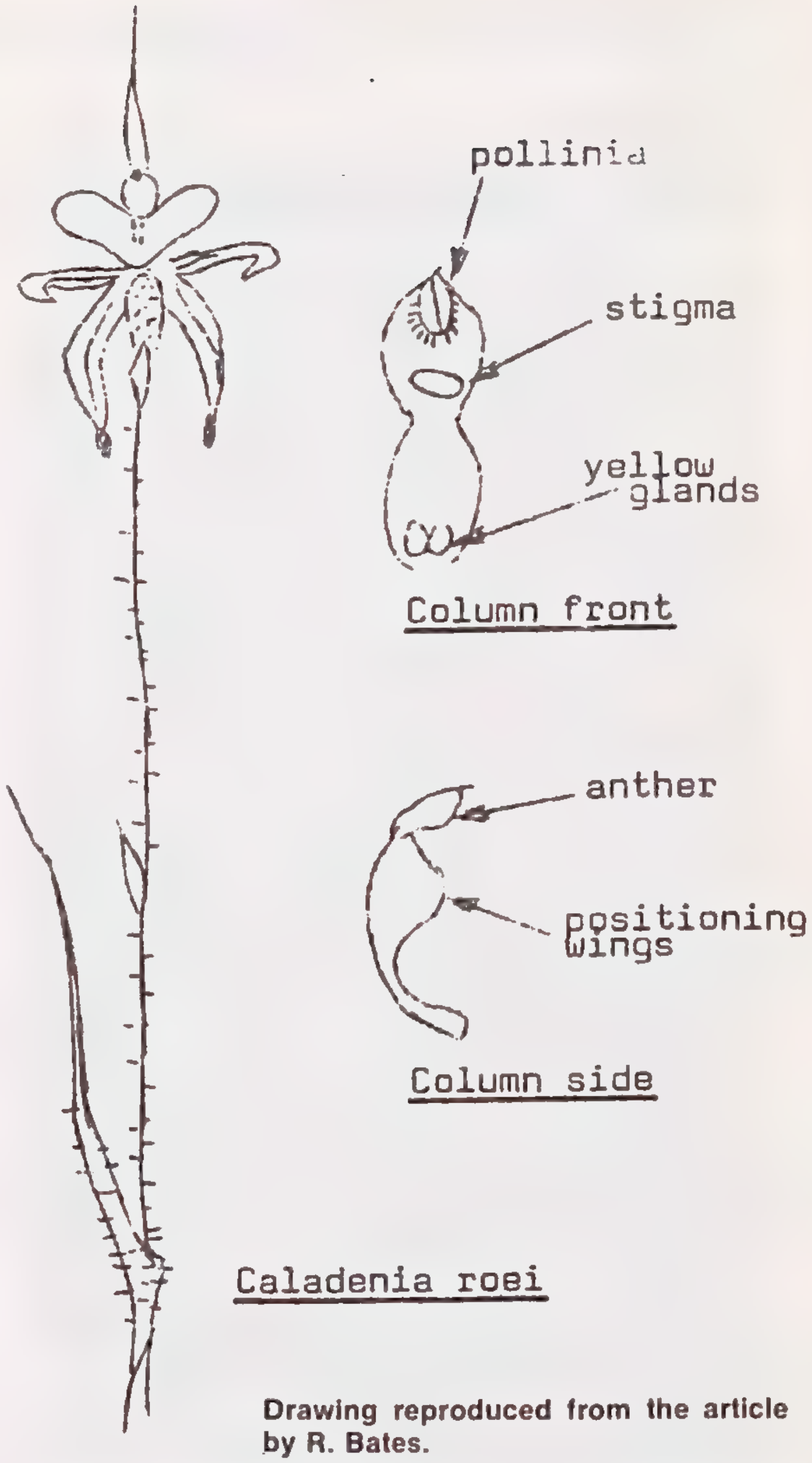
August, 1983



Caladenia roei

Drawing by Collin Woolcock for *The Orcadian* Vol. 6, p. 127 (December 1979)



Caladenia roei

Drawing reproduced from the article by R. Bates.

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Who's Who

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ANOS Groups and Affiliated Native Orchid Societies.

NEW SOUTH WALES

- **Port Hacking Group:** Tel. (02) 524 9996 c/- Sec. 12 Laguna St. Caringbah 2229. Meets 8 p.m. 4th Tuesday at Community Hall, Gymea Bay Road, Gymea.
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- **Warringah Group.** Tel. (02) 99 2468 c/- Sec. P.O. Box 524, Dee Why, 2099.
  Meets 8 p.m. 2nd Thursday at the Thomas Vickers Memorial Hall, Cnr Pitt and Grainger Roads, North Curl Curl.
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  Meets 2nd Tuesday at the Meeting Room of the Wollongong Town Hall.
- **Central Coast Group.** Tel. (043) 88 1785 c/- Sec. 158 Geoffrey Rd., Chittaway Point, 2259. Meets 8 p.m. 2nd Wednesday at the Baptist Church Hall, cnr York and Frederick Streets, East Gosford.
- **Newcastle Group.** Tel. (049) 59 2734 c/- Sec. 4 Pemell Street, Toronto, 2283.
  Meets 4th Wednesday at the John Young Community Centre, Thomas Street, Cardiff.
- **Hastings Valley Group.** Tel. (065) 85 6150.
  Meets 7.30 p.m. 4th Friday at Uniting Church Hall, Hastings Street, Wauchope.
- **Far North Coast Group.** Tel. (066) 24 1023 c/- Sec. 14 Fischer Street, Goonellabah 2480.
  Meets 8 p.m. 1st Thursday at Ballina High School, Burnett Street, Ballina.

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- **Victorian Group.** Tel. (03) 551 3307 c/- Sec. 17 Leonard Close, South Clayton 3619.
  Meets 8 p.m. 1st Friday at the National Herbarium, Royal Botanic Gardens, Melbourne.

QUEENSLAND

- **Darling Downs Group.** Tel. (076) 35 8627 c/- Sec. P.O. Box 5141 G.P.O. Toowoomba 4350.
  Meets 7.30 p.m. 3rd Friday at the Technical & Further Education Centre, Old Empire Theatre, Neil Street, Toowoomba.
- **Native Orchid Society of Queensland** (Affiliated) Tel. (07) 378 2881 c/- Sec. P.O. Box 159, Broadway, 4000.
  Meets 8 p.m. 1st Monday at Bread House, 49 Gregory Terrace, Brisbane.

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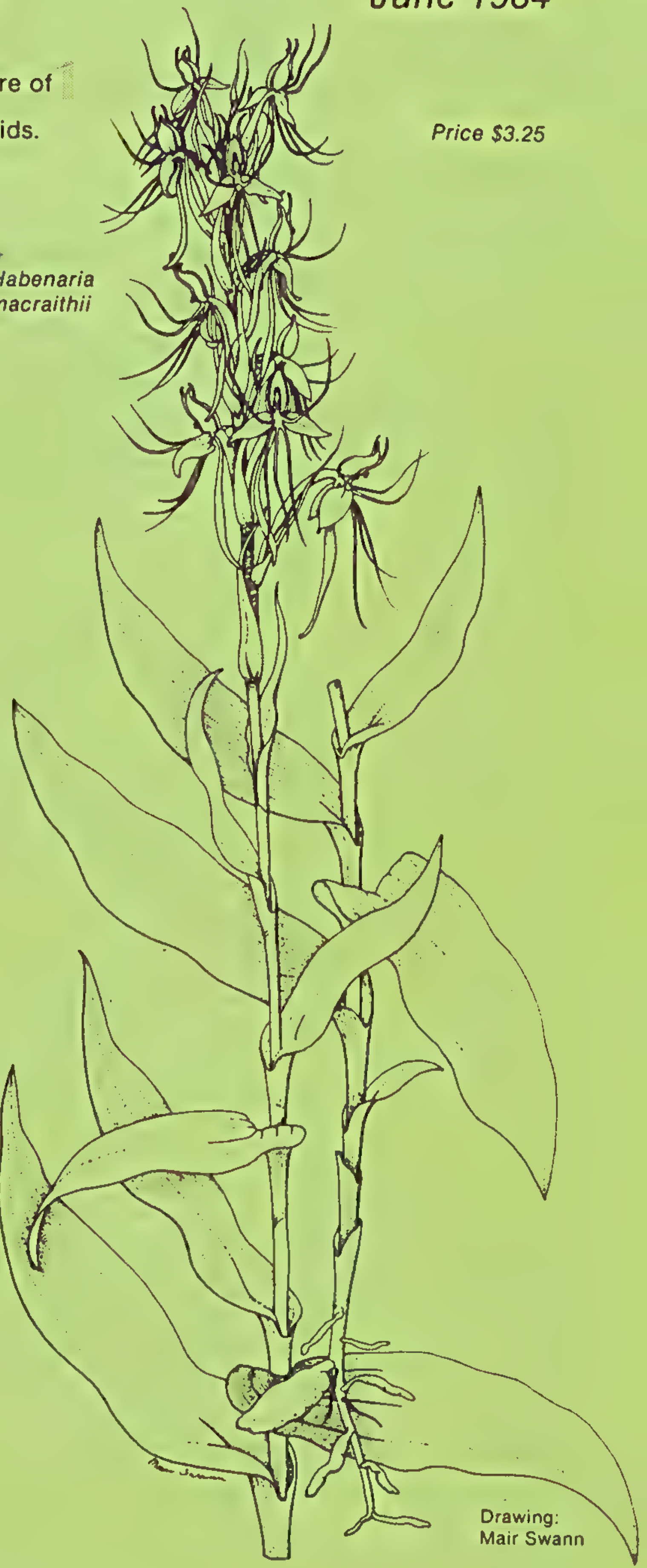

Habenaria macraithii

Drawing: Mair Swann

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EDITORIAL

Something personal — from the retiring editor.

In August, 1983, I gave ANOS Council notice of my resignation as editor on completing Volume 7 of *The Orchadian*. I have now done that and my withdrawal symptoms have begun. There are many important articles "in the pipeline" and many promises to be honoured. I am sure the new Council to be elected on 11 August, 1984 will rise to the occasion and ensure the future success of our journal. After 21 years it has reached maturity. It is time for a new editor to shape its future. So it is not for me to dwell on what is to come. Instead I shall take the liberty of looking back over my short 15 years in orchids and expressing briefly some personal attitudes that I could not properly impose on readers during my 7-8 years as editor.

In that time I have made many friends who have been devoted to orchids for much longer than I, but show no sign of losing interest. They continue to make hybrids, to attend monthly meetings and hear the same speakers on the same subjects, year in year out — without having to stifle a yawn. I have known growers with thousands of hybrid orchids who are quite unaware of the species behind those hybrids. For them it is the sheer beauty of the flowers that matters — not the names of the species or even the genus or country of origin. Some concentrate on the one genus, or on "terrestrials"; others collect the lot — like butterfly or stamp-collectors. The "scientific minded" may concentrate on pollination mechanisms or tissue culture, or taxonomy, or ..

Personally I am not an "orchid buff" in any of these categories. I have been an *interested* onlooker — never an expert. One can understand — or appreciate — without becoming a narrow specialist. The so-called "world of orchids" has inexhaustible possibilities; but life is short. The orchid flower is beautiful indeed; but so is the camellia, the grevillea and ... It is time to move on. Looking back now I recall many things that have fascinated me because they were unexpected and unique. Of these, the two most recent have been a book and a patient experiment.

The book is Clifton Pugh's "A Year of Orchids". I have acquired, and seen, many beautiful orchid books but none like Pugh's. Just when I had become *blase'* about the endless stream of finely executed botanical drawings, the "how to grow" stuff and the glossy colour photographs, suddenly I found this book of paintings by a world-famous painter who has bestowed upon us a true artist's interpretation of Australian native orchids in their bush habitats. Botanical details and botanical names are in a separate part of the book. They are irrelevant to Pugh in painting his portraits of the orchids of the harsh country that he loves so much. There is no other book to match this one. It will survive even if the orchids are lost. We should be grateful that a painter whose work is in the major galleries of the world has done this for the orchids we love but have not always understood. I feel that he is no "orchid buff" or collector. His work is a personal appreciation and quite unexpected.

The experiment relates to Keith Ingram's "La Mancha", at Mount Tomah and the patient regeneration of its rainforest flora over many years. I visited Keith early in 1983 and was so fascinated that I prevailed on him to describe it for *The Orchadian*. This he will do in the next issue; so I need only say, here, that this also is "something personal", quite unexpected, unique and refreshing — to keep the "world of orchids" from going stale for me. So that's it, then ... I hope *The Orchadian* will continue to give us the Unexpected.

7 June, 1984 — J.J. Betts

- **The late Lloyd Bradford**

It is sad news indeed to have to report the passing of Lloyd Bradford on 6 May, 1984. Lloyd was a foundation member of ANOS, a Vice President of Council, inaugural chairman of its judging panel and a life member of both ANOS and its Sydney Group. Obviously unwell for some time, Lloyd continued to attend society meetings until quite recently. He was a truly charming quiet man; so that his deep understanding of our native orchids and how to grow them must have gone unsuspected by many members. We all, now, express our deepest sympathy with Lloyd's family. We share their loss.

FEEDBACK and FOLLOW-UP — see p 281

Notice of ANOS Annual General Meeting

Members are advised that the 21st Annual General Meeting of the Australasian Native Orchid Society will be held on Saturday, 11 August 1984 at 10 a.m. in the Maiden Theatre, Royal Botanic Gardens, Sydney. (Entry via Mrs Macquarie's Road is suggested.)

Members may vote by being present at the meeting or by completing a proxy form and lodging it with the Hon. Secretary not less than 48 hours before the meeting.

A meeting of Delegates from ANOS Groups and affiliated native orchid societies, comprising the ANOS Advisory Committee, will commence at 1.30 p.m. on that day at the same venue.

M. Harrison
Hon. Secretary

CULTIVATION BASED ON HABITAT OBSERVATION

X *Rhinerrhiza divitiflora*

by Michael Harrison

The so-called "monotypic genera" have always held a special fascination for me. Like single children, they seem to have a lonely yet somewhat romantic existence, with just a hint of mystery, as if they and they alone, are privy to some special secret.

Of these, *Rhinerrhiza divitiflora* is perhaps the most familiar, although such species as *Papillilabium beckleri, Schistotylus purpuratus* and *Peristeranthus hillii* all fall into this category: they are the sole members of their respective genera.

Taxonomically, these orchids are considered to be so individually unique that none of them can be classified as belonging to any other genus, and each has been set apart from all other orchids not just specifically but generically. Of course, botanists have been known to rearrange things from time to time and we have no guarantee that at some time in the future, further changes will not be deemed necessary. In fact, *R. divitiflora* is closely related to *Sarcochilus,* and at one time was included in that genus. The only significant features setting it apart from *Sarcochilus* are the small multiple "warts" covering the exposed surfaces of the roots (from which the common name "Raspy-Root" is derived) and the spidery or filiform floral segments. The short-lived nature of the flowers is also a distinguishing feature, although at least one *Sarcochilus* species, *S. moorei,* also produces flowers which are fugacious.

Evolution: speculations

The question is: are we seeing advancement or regression? Is *R. divitiflora* the last outpost of a once successful genus now in its twilight years; or is it a new face in the crowd, a recently evolved prototype of the new wave, the shape of things to come? Perhaps a better understanding may be obtained by closer comparison with *S. moorei.* As well as producing flowers which seldom last longer than one day, other similarities exist between these two orchids. In both, the flowers are carried on long pendulous racemes, up to forty centimetres long. The flower buds remain small and apparently dormant until only about a week before they open, at which time they begin to swell noticeably. They then develop quickly and open simultaneously, although usually several of the distal buds do not develop at this time, and these go through the same process some weeks later. Also, the flowers are similar in colour, being a pale yellow/orange, blotched and spotted with dark orange or red. A further major similarity between these two orchids is the phenomenon of simultaneous flowering of all individual plants on a particular day. This has been observed in the field with both species and was certainly confirmed, at least in the case of *R. divitiflora,* at the Spring Show conducted by ANOS Sydney Group in October 1983.

At that Show there were no less than eight flowering specimens of *R. divitiflora,* each grown in cultivation in the Sydney area. Individuals situated miles apart and under "artificial" conditions all flowered at the same time, and I expect that every *R. divitiflora* in the Sydney basin was in bloom on that day. I imagine weather conditions are instrumental in the occurrence of this phenomenon, although the exact triggering mechanism can only be guessed at. Upon reflection, this really is an amazing adaptation; the flowers remaining dormant for a long period, until the correct set or sequence of circumstances provides the stimulus for a frenzy of developmental activity. Obviously, the opening of the flowers on a particular day is purposeful and possibly corresponds with the emergence of a pollinator. Perhaps the pollinator also is only shortlived and it is imperative for these orchids to attract this benefactor without delay. Hence the magnificent but all too fleeting mass display.

The similarities between *S. moorei* and *R. divitiflora* do suggest more than coincidence and if *R. divitiflora* is closely related to *Sarcochilus,* then the species to which it is most closely related is *S. moorei.* Now, where does *S. moorei* lie in relation to others of its genus? Unlike all other *Sarcochilus* species in Australia, *S. moorei* is not endemic to this continent and extends into Papua New Guinea and surrounding islands. It is a lowland tropical species occurring in Australia only in the Iron Range/McIlwraith Range area of Cape York Peninsula; although within its preferred habitat it is a common orchid.

The genus *Sarcochilus,* as it is currently understood, is a temperate genus, confined almost exclusively to the east coast of Australia. It has always seemed to me to be centred around the New South Wales/Queensland border ranges, for it is in this region that it reaches its most diverse development. One species, *S. australis,* probably does not reach as far north and, apart from *S. moorei,* three others, *S. roseus, S. serrulatus* and *S. tricalliatus* are confined to the tropics. But each of these is closely related to one of the temperate species, *S. roseus* to *S. ceciliae, S. serrulatus* to *S. olivaceus* and *S. tricalliatus* to *S. hillii,* and may be almost considered as tropical forms of these. *S. moorei* then, is not a typical member of its genus and many of its characteristics do suggest an evolutionary link with *R. divitiflora*. If this is so, then *R. divitiflora* may well represent a relatively recent divergence from *Sarcochilus*. Its wide distribution, tolerance of varying habitats and good germination rate (in many places it is locally abundant) mark it as a successful and well-adapted member of our orchid flora. I believe it is an orchid on the ascent.

Habitats

R. divitiflora also extends into North Queensland, although it is restricted to the highlands in the tropics. Its southern-most limit is generally given as the Hunter River, but there are reports of it having been found from a little further south in the past. In my experience, this orchid is most at home in areas of "dry scrub", a type of poor rainforest which commonly occurs on poorer soils or in more exposed situations, often above or adjacent to typical sub-tropical rainforest. In some places it occurs as just a narrow band separating the rainforest from the hardwood forest, while in other situations it constitutes a significant proportion of the local vegetation, covering whole hill-sides and ridges. Such areas are usually rich in epiphytic orchids, for while the cool humid atmosphere of the rainforest is maintained to a certain extent, the light is much brighter due to the lower and more open nature of the canopy and the air movement is not as restricted. A great number of orchids colonise the Tree Heath *(Trochocarpa laurina)*, a common inhabitant of these forests, which seems to be able to support just about any epiphytic orchid, often in great numbers. It is not a tall tree, seldom exceeding six or seven metres, but its furrowed, corky bark must provide just the right conditions for the germination and growth of many orchids and *R. divitiflora* is certainly one of these.

The flattened, tuberculous roots of *R. divitiflora* which, unlike most orchid roots, are a greenish grey in colour, invariably travel for at least several metres along the host limb. A large plant is an impressive sight with its extensively spreading root system and leafy crown, and where a specimen has produced keikis from its stem, which seems to occur only infrequently, then a multiple-crowned plant develops. Such plants, although not commonly encountered, are so striking in both size and stature that they live on in the memory for years. I know of one such specimen near Kempsey which has five healthy, adult-sized crowns. This plant measures about fifty centimetres across and when I saw it during 1983, I was able to count over twenty-five developing racemes. Perhaps one day I will be lucky enough to catch it in flower.

Like the roots, the appearance of the leaves of *R. divitiflora* also sets this orchid apart from other *Sarcanthinae* species. They are a very deep green in colour, have undulate margins which may or may not be serrulate, and look and feel rough and dry, almost as if they have become dehydrated. These coarse, leathery leaves may reach up to 250 mm in length and 50 mm in width on a large plant. When in flower, *R. divitiflora* is truly spectacular, even if only for a single day. Anything up to eight pendulous inflorescences are produced and these may reach forty centimetres in length, each supporting as many as fifty individual flowers. With all of these flowers open at once, in a blaze of bright orange, it is not difficult to imagine *R. divitiflora* as one of the world's most beautiful orchids. Usually within twenty-four hours, however, the flowers have begun to close up and before too long they have withered completely.

Although restricted to the highlands in the tropics, further south *R. divitiflora* extends right down to sea-level and I have seen it on rainforest trees within one hundred metres of the beach. It also occurs up to 1000 metres on the ranges and may be encountered in many varying situations from open forest to dense sub-tropical rainforest, and on many different host trees, especially those with flaky bark. Heavy shade appears to suit this orchid well and plants are often seen in positions where they get no direct light at all, sometimes very low down on the host, almost lost in the shadows of the forest floor. In some places it is so common that it is seen on just about every suitable tree in the area, with scores of small seedlings, often growing very closely together, clustered around and below the adult plants. Of course, few of these survive to maturity, for nature has a way of maintaining a healthy balance by culling out all but the strongest. Some individuals develop a more or less erect pattern of growth, with the crown of the plant facing straight up, while others are almost pendant. There is no apparent reason for this and both growth forms may be situated side by side. After many years, the stems grow quite long, up to fifteen centimetres, and are clothed in the bases of the old leaves.

Cultivation

Experience has taught me that one of the secrets of successfully establishing *R. divitiflora* in cultivation is to choose not too large a plant to begin with. Too often I have seen growers turn up with massive specimens they have collected from the bush, only to see them languish and die within eighteen months or so. Large specimen plants do not take kindly to disturbance and invariably much of the root system is damaged severely or lost during collection. *R.divitiflora* does not produce roots as quickly as many other *Sarcanthinae* and large plants are usually not able to replace an amputated root system quickly enough to survive. I have found that younger plants perform much better and by preference I would select one with a leaf span of about fifteen centimetres. Plants of this size seem to have no trouble in re-establishing themselves, and although *R. divitiflora* cannot be considered a fast-growing orchid, once a plant is established it generally grows strongly, producing progressively larger leaves and slowly increasing in size.

Just about all of the truly epiphytic *Sarcanthinae* species behave in this manner. Adult, fully grown plants do not usually make the best subjects for re-establishment in cultivation. Juveniles perform best and can be expected to begin growing almost immediately, as opposed to older plants which are often sluggish at best. As is the rule with all new acquisitions, softer than normal environmental conditions should be provided until the plant has begun to show definite signs of recovery and advancement. It should then be introduced to a position where it can be afforded its normal range of treatment, but still observed closely for a while to ensure continuing improvement. Often, it may be considered best not to move the plant at all but to keep it in its original position. A slight decrease in the frequency of watering or an increase in light may be beneficial at this stage but the grower must use his own judgment when making such decisions. When establishing *R. divitiflora,* it is advisable to choose a host large enough to cope with and reasonably contain the extensive root system of a mature plant. I would not consider anything less than fifty centimetres in length to be adequate, and something closer to a metre is best, for although this takes up valuable space in the orchid house, it will be worth it in the long run. "Paper-bark" logs are excellent and are easy to obtain from landscape nurseries. I prefer the type with thick, corky bark so that the roots can penetrate the surface layers for extra protection and insulation. Weathered hardwood slabs are also very successful and the roots take well to this medium. My current favourite is ironbark, with which I have been experimenting lately. These slabs or totems seem to suit most orchids and the roots do not appear to be affected by the tannin supposedly present in ironbark. The type with flaky bark *(Eucalyptus fibrosa,* I think) is best, as the orchid roots can get in between the layers and are protected to a certain extent.

R. divitiflora prefers a sheltered position in the orchid house with protection from drying winds and excessive heat and cold. The plants in my collection are grown in an open fibre-glass house in which I grow most of my cool-growing *Sarcanthinae* and *Bulbophyllum* species. It provides a humid, cool atmosphere with good ventilation. One half of this orchid house is kept considerably more shaded than the other so that various micro-environments can be created. Plants of *R. divitiflora* are situated on the shady side and facing south in an attempt to keep the levels of light down a little, and although some wild plants are found in extremely dark positions, I do allow my plants somewhat more light than this. I remember reading in *The Orchadian (Vol. 5, No. 10)* a few years ago, a comment made by Ted Gregory regarding the cultivation of this orchid. He said it grows best in cultivation if situated "five or six feet off the ground", and I recommend that this advice be followed. On occasions I have tried growing plants under the benches, where conditions are especially shaded and cool, and met with less than satisfactory results. I grow many of my slab-mounted orchids hanging down under the benches and usually find it ideal for those which require a cool, humid atmosphere, but for some reason *R. divitiflora* is not suited to such a position.

Like most *Sarcanthinae* species, *R. divitiflora* does not really have a dormant or rest period in its annual cycle of growth, and it continues to grow throughout the year. Of course, the cooler weather and shorter day length during the winter months result in a slow-down of metabolic activity but care must still be taken to ensure that the requirements of the plant are being met. At times it may be difficult for the grower to adjust to the winter, following on, as it does, from autumn, the best of the seasons. I enjoy my *Sarcanthinae* species more during autumn than at any other period, for it is at this time of the year, from mid-February to the beginning of June, that these orchids grow most strongly. Root growth, in particular, is most marked during autumn, and it is such a pleasure to see new roots emerging from the stems and finding their way down on to the host or into the potting medium. Just as satisfying is the sight of the older, established roots as they begin to extend their green tips once again in response to the easing of the summer heat and the increase in rainfall usually a feature of the summer to autumn changeover. During this period when these plants are growing most strongly, watering may be increased substantially, for as long as ventilation is good and potted specimens are in a freely draining medium, then they will take virtually as much water as the grower cares to give them. Feeding is also most beneficial at this time and should not be forgotten. Repotting and remounting should also be done at this time of the year and I try to get this done during early March, to give such plants the best chance to re-establish during the prime growing months of April and May.

As the weather begins to cool down and night-time temperatures drop below about 8° C, growers should ease off watering somewhat to avoid the dangers of fungus attack. As the days become increasingly shorter and the nights colder, watering should be restricted further, for few orchids will tolerate cold wetness for very long. Watering should now be carried out "on a rising temperature", as the cultural handbooks put it; which generally means in the morning, so that plants will have dried out again by evening. Orchids on slabs have quite different requirements from those in pots and may need regular watering, perhaps as often as once a day, even during winter, depending on the species and cultural conditions. On the other hand, potted specimens may require watering no more often than once every ten to fourteen days, for even a well-drained mix dries out only slowly during cold weather.

Once established, *R. divitiflora* usually grows well in cultivation and is generally free of the problems which sometimes plague other orchids, such as insect and fungus attacks. It is an interesting orchid, for even when it is not in flower, its unusual appearance makes it unique, and it is deserving of a place in any collection of Australian native orchids.

Lot 2, Howes Road
via Wilberforce,
N.S.W. 2756

30 May, 1984

A new species of *Habenaria* from Cape York Peninsula

by P.S. Lavarack

Diagnosis:

***Habenaria macraithii* Lavarack sp. nov. *H. dryadum* Schltr simile sed, foliis dispositis late, sepalis acutis, petalis auriculatis perspicue basi lobi postici et stigmaphoris paulo brevioribus quam canalibus antherae,differt.**

Erect terrestrial herb, glabrous, 50-60 cm tall. Tubers approximately cylindrical 2-3 x 0.5-0.8 cm; roots thick and fleshy. Stem with 4-5 sheathing bracts at the base, 7-11 well-spaced leaves and 3 sheathing bracts above the leaves. Leaves lanceolate, sheathing, acuminate, thin in texture, up to 12 x 2.4 cm, with 3 prominent veins. Inflorescence many-flowered, dense, the rachis about 10 cm long, floral bracts 2.8 x 0.6 cm, attenuate-acuminate. Ovary 2-2.5 cm long, fusiform. Flowers green in all parts spreading, erect. Dorsal sepal 1.3 x 0.8 cm, cuculate, ovate, acute. Lateral sepals 1.3 x 0.4 cm ± deflexed, oblique, ovate-lanceolate, acute. Petals bipartite; posterior lobe erect 16 x 1.5 mm, linear, curved, with a small but distinct auricle at the base on the posterior margin; anterior lobe spreading, curved, filiform 20 x 0.5 mm. Labellum deeply tripartite; the lateral lobes 22 mm long, filiform; the mid-lobe 18 mm long, narrow — linear, slightly thicker than the lateral lobes; spur about equal in length to the ovary, cylindrical, slightly dilated a little below the middle, about 22 x 1.5 mm. Anther about 2 mm high; anther cells not widely separated; anther canals about 2 mm long. Staminodes (auricles) large, approximately globular about 2 x 1 mm. Pollinia shorter than the caudicles; retinaculum large, almost globular. Stigmaphores slightly shorter than the anther canals,obtuse.

Typus. Cook District: Cape York Peninsula, Brown Creek Near the crossing of the Portland Roads road. 12°15′S;142°5′E, Sept 1983 AOF 58 (BRI, holotypus).

Habitat. To date this species has been recorded only at the type locality given above, where it was growing in deep alluvial soil rich in organic matter on the upper levee bank of Brown Creek. The vegetation type at this locality is a tall closed gallery forest with a fairly open understorey and a deep leaf litter. It is an area which would be reached only by the higher floods. *Apostasia wallichi* was also growing in the same area.

Notes. This species is quite closely related to two New Guinea species *H. dryadum* Schltr (syn. *H. epiphylla* Schltr) and *H. dracaenifolia* Schltr. Schlechter (1905) describes both these species as having a rosette, while *H. macraithii* has widely spaced leaves. There are also differences in the flowers, notably in the posterior lobe of the petal, which has a prominent auricle in *H. macraithii*, and in the stigmaphores which, in this species are shorter than the anther canals, while they are longer in *H. dryadum* and about the same length in *H. dracaenifolia*. The staminodes in *H. macraithii* also appear to be considerably larger than in either of the other species. Given the differences which have been regarded as diagnostic in this genus, this taxon would appear specifically different from its New Guinea relatives.

Amongst Australian species it is closer to *H. hymenophylla* Schltr, but may be readily distinguished by the larger size and by numerous floral characters, notably the petals which feature an anterior lobe slightly longer than the posterior in *H. macraithii* and an anterior lobe which is much shorter than the posterior in *H. hymenophylla*.

The flowering time for *H. macraithii* appears to be late autumn and winter. Plants collected in late September had almost finished flowering. This species has been named in honour of Gerald McCraith, Chairman of Directors of the Australian Orchid Foundation who has done much to facilitate the study of Australian Orchids.

References

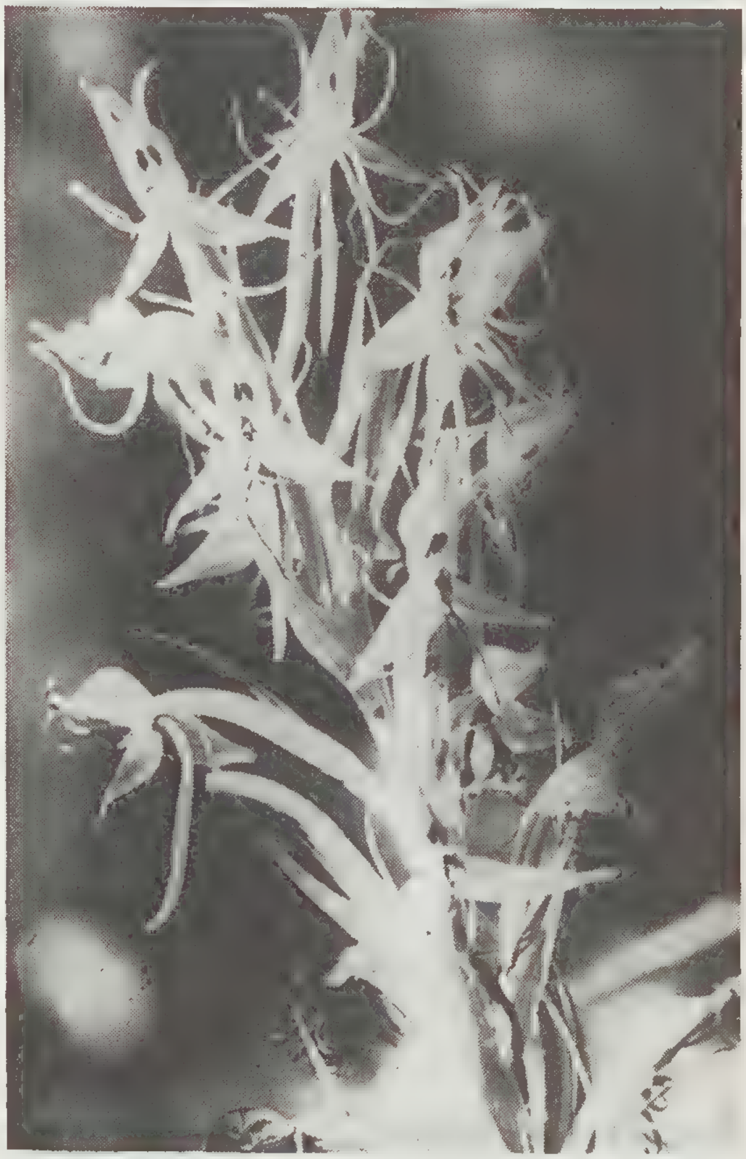
Schlechter, R.R., 1905. Orchidaceae **in:** K. Schum. et Laut., Nachtrage zur Flora der deutschen Schutzgebiete in der Sudsee, pp 77, 78.

Acknowledgements

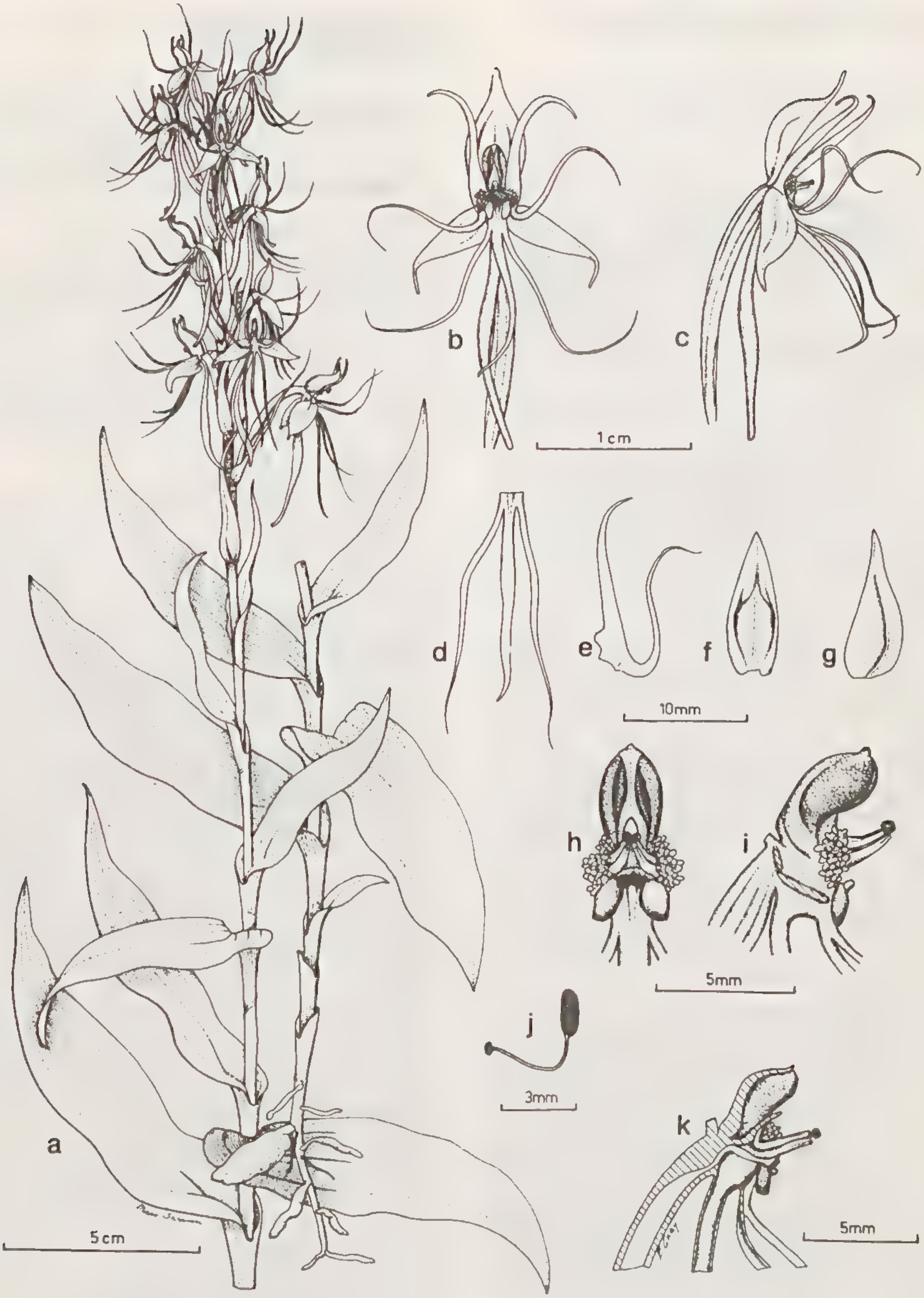
My thanks are due to Mair Swann and Bruce Gray for the illustration, to Philip Cribb for help with identification, to Joe Betts for the Latin diagnosis and to the Australian Orchid Foundation who financed the expedition on which this species was discovered.

24 May, 1984.

National Parks & Wildlife Service
Pallarenda, Townsville, 4810.



Habenaria macraithii —a new species found Sept. 1983 at Brown Creek.



Habenaria macraithii sp. nov.

a. Habit
b. Flower from the front
c. Flower from the side
d. Lobes of labellum
e. Petal
f. Dorsal sepal
g. Lateral sepal
h. Column from the front
i. Column from the side
j. Pollinium
k. Flower in section

To indicated scales
(Habit figure by Mair Swann, details of flowers by Bruce Gray)

LETTER TO THE EDITOR

Research on Australian orchids

Dear Sir,

I wish to comment on some of the statements made in a letter (*Orchadian* 7:11, March 1984) by Bob Bates. I don't want to appear to be too critical, but I believe that some of Bob's statements are not only misleading to your readers but also incorrect. To state that "... very little serious research has been done on most aspects of Australian orchids." is somewhat insulting to the botanists (both professional and otherwise) who have done a lot of research on Australian orchids. I realise that a question of definition of terms can arise here, but I am taking Bob's statements as they would be interpreted normally by your readers. Also, I am not sure that well-informed and knowledgeable people interested in orchids would really consider Fitzgerald, Rupp, Rogers and Nicholls as non-botanists. Amateur botanists they may have been, but so far as the study of Australian orchids is concerned, these four will take a lot of beating!. If Bob has managed to track down "all the literature available on our native orchids" he can not be anything but-impressed by the results of the wide-ranging and depth of research by these "non-botanists".

I do not disagree that there is much more to study about Australia's orchids, but to imply that "very little serious research" has been done is totally incorrect. In fact, I take exception to the use of the word "serious" in such a context. It implies that the research done has been frivolous.

To add insult to injury, Bob then makes the astounding statement that "No Australian orchid genus has ever been completely revised"! Maybe the crux of that statement is the word "completely". However, I am not sure that he really means that Robert Brown did not "revise" **all** the genera in his Prodromus, nor that Rupp did not "revise" such genera as *Dendrobium* in his revision of that genus for Australia in the 1940's, nor that Dockrill (a non-botanist of course) did not "revise" various genera in his series of articles in the *Orchadian* in the 1960's, not to mention my "revision" of *Caleana, Arthrochilus* and *Spiculaea* in the 1970's.

I am not attacking Bob's letter because of my meagre contributions to Australian orchidology but because I felt that his tone was too negative. A lot of dedicated people have spent a lot of time studying various aspects of Australia's orchids — just peruse the library catalogues at Kew or the National Herbarium of N.S.W. and see how many papers have been published over the years. However, I do agree that more research is required, not only in the Orchidaceae, but in most other families of plants native to Australia.

I do agree with one statement Bob makes; "the piecemeal work of the past has often been confusing and even conflicting" — my interpretation of this may be different from his intention, but the partly-informed or impetuous amateur "non-botanist" eager to rush into print has been the cause of most of these problems. Luckily, there are not too many of these people around.

One other point; I would be very interested to know where the 80% of our native orchids are being cultivated; I would have thought that 30 — 40% would be nearer the mark!

Yours faithfully,
Don Blaxell
Royal Botanic Gardens,
Sydney, N.S.W. 2000.

8 May, 1984

BOOK REVIEW

"Australian Terrestrial Orchids"

by Collin and Dorothy Woolcock
Published by Thomas Nelson Australia, 1984.

Those with an interest in native orchids of southern Australia will all want to have this beautiful book. It includes short, easily understood descriptions accompanied by Collin Woolcock's outstanding colour illustrations. These show 182 species (almost as many as indicated on the dust-jacket). Black and white line drawings are used in the introductory chapter to illustrate floral structure and, sparingly, in the later part to illustrate some additional species.

The illustrations are such an important part of the book that they must be further considered. It is intriguing to learn that Collin Woolcock works with crayons instead of paints. So perfect is his technique that he produces the finest detail possible for the colour printing process. Many of the plants are naturally small and many of the plants are shown at less than natural size. The result is often a disappointing lack of detail, despite the artist's skill. Enlargements of detail are given for some flowers, e.g. the columns of *Thelymitra*, and whole flowers of *Prasophyllum*, but these should have been shown at two or three times their present size. The colours in the reproductions are mostly accurate, but in the case of some of the blue *Caladenia* and *Thelymitra* I think Mr Woolcock's originals would not have looked so gaudy. I cannot detect that small but characteristic difference in yellow toning between the flowers of *Diuris sulphurea* and *Diuris aurea*.

While the book covers a large number of species, those from the warmer parts of Australia are wholly omitted. I note that some terrestrial genera endemic in temperate Australia also escape mention (*Adenochilus, Burnettia, Epiblema* and *Rimacola*). It will certainly be used as an identification manual, but its incompleteness, together with limitations of pictorial detail and absence of identification keys, limit its usefulness in this direction. It is therefore best used in conjunction with the few satisfactory local floras.

There is no coverage of culture and conservation gets only a passing mention.

The text is reasonably accurate and nomenclature is up to date. The authors go so far as to give the name of the author for each genus, species ad variety, though, in accordance with-accepted practice, many are so abbreviated as to be unintelligible to the average orchid-lover. Really these abbreviated names are superfluous jargon in a book like this. They have a place in formal floras, taxonomic reviews and writings on nomenclature, but the *Code of Botanical Nomenclature* makes it clear that generic names (one word) and specific names (two words) are complete without them.

To help evaluate this book I took from the shelf my copy of *Australian Orchids* illustrated with paintings by Rosa Fiveash. The comparison is relevant because both books rely rather heavily on their colour art work. The pictures in the Woolcocks' book are incomparably better; and the text, apart from being more up to date, is more accurate and better written than that provided by Noel Lothian for the Fiveash book.

In recommending this book, I think the price at $40.00 may seem high to some readers; but books, unless with a very large printing run, are expensive; and we have the 72 full-page colour plates.

David K. McAlpine
The Australian Museum,
Sydney.

May, 1984

EDITORIAL FEEDBACK AND FOLLOW-UP

- **The March issue** was very late and contained many typographical errors for which we must apologise. ANOS Council is more concerned, however, by the number of copies that have been returned by subscribers because of deficient printing (blank pages, ink-blotched pages and so on). Postage charges for retrieving these returned copies and replacing them are being incurred to a degree not acceptable to Council. I am to ask all subscribers who have not already done so to report (by telephone if possible after 8 pm) any defective copies to Mr N. Hilliger (02) 99 2468 or Mrs M. Spence (02) 451 8085.
- **The AGM notice** on page 274 is more important than ever this year. Council will report back to the Advisory Committee the actions taken on recommendations made by the Committee last year. A new Council will be elected — including new occupants of the offices of President and Editor, at least. Five ANOS Groups are at present represented on Council (three metropolitan and two country Groups). It has been a great advantage to have country Councillors regularly travelling long distances each month to attend meetings. All members should be grateful to these Councillors and it is hoped that the new Council will include a similar proportion from country Groups. Please get your nominations in and make this trend a continuing success. The future of colour in *The Orchadian* will, no doubt, be discussed at the AGM and by the Advisory Committee.
- **Contributors of articles** might please note that, in the transition period in which a new editor is to be appointed, (a) those writers who have been corresponding with me about work in progress and/or planned for the future may continue writing and sending articles to me; but (b) new contributors (after June 1984) should send their articles to the Hon. Secretary, ANOS (address p. 274).
- **Who's Who** (directory page) is omitted from this issue. It is under revision and will be resumed in due course.
- **Lindley's Herbarium:** notes by Mark Clements at Kew. No.3 in this series is deferred pending advice from a referee in W.A.

Wollongong and District Native Orchid Society Tour To Papua New Guinea

An extensive familiarisation and orchid plant collecting tour to Papua New Guinea sponsored by the W. & D.N.O.S., escorted by John Womersley and operated by Niugini Tours of Sydney, will depart Sydney in the second week of August, 1985. The cost of $2,660 includes 15 nights accommodation, all travel by air, road and sea, departure taxes, visa fees and other incidentals. The group will be of 15 (minimum) to 18 participants. Intending collectors must have access to import quota permits for Australia. For further details contact Mr Ron Wheeldon 227 Mount Keira Road, Mt Keira 2500. Tel (042) 287 851.

SPRING SHOW DATES

• ANOS Warringah Group

This Group's Spring Show is the premier native orchid annual show in N.S.W. In 1982 and 1983 it produced the winner of the prestigious Ira Butler Trophy for Australian Native Orchid Hybrid of the Year. Filling the Mona Vale Memorial Hall with colour and perfume, this exhibition is always a photographer's delight with its large range of species and the latest hybrids.

The 10th Annual Spring Show will be held on **Saturday 8th and Sunday 9th September 1984 at the Mona Vale Memorial Hall.**

Top quality seedlings are offered for sale together with flowering size plants. Expert advice on all aspects of orchid culture is freely available to the novice growers.

Enquiries: C. Arnott (Show Marshal) Phone 98 9173
R.M. Lowe (Show Secretary) Phone 44 3993.

All growers who are financial members of ANOS or its Groups, or of the O.S. of N.S.W. and affiliated Societies are invited to enter.

• Wollongong and District ANOS

will be held at the Warrawong Shopping Centre on Thursday, 27; Friday, 28 and Saturday, 29 September, 1984.

• ANOS Central Coast Group

This Group's Spring Show will be held on Saturday, 1 September, 1984 at the Scout Hall, Gertrude Place, Gosford. Open to public 10 a.m. to 5 p.m. Plants for sale.

• NOSSA (Adelaide)

The Native Orchid Society of South Australia will hold its Native Orchid Spring Show in The Orphanage Hall, Goodwood Road, Goodwood on Saturday 15th September and Sunday 16th September, 1984.

Saturday 15th September - from 12 noon to 5 p.m.
Sunday 16th September - from 12 noon to 5 p.m.

There will be competitive displays, an information stand and plants will be on sale with cultural advice provided.

• Bass Group (Tasmania) ANOS

First Spring Show is to be held 28—29 September, 1984. Set up Friday 28 (p.m.). Open to public all day Saturday 29. Secretary: Mrs Gwen Smith, R.D.793Kindred, Tas., 7310.

The Effects of Bushfire on Victorian Epiphytic and Lithophytic Orchids.

by P.B. Adams* and S.D. Lawson**

The disastrous bushfires of March 1983 burnt out 53,000 hectares in East Gippsland's Croajingalong National Park, which contains all five Victorian epiphytic and lithophytic orchids. This experiment of nature has added to our understanding of the survival mechanisms of orchids. Fire has always been present in the forested areas of Australia, both from natural causes such as lightning, and from the use of fire by aborigines, foresters, and cattlemen. The effect of fire on terrestrial orchids is to enhance growth and flowering in the following spring. The effect on epiphytic and lithophytic orchids is less often considered, and generally thought to be destructive.

In August and November 1983 we travelled to a number of Victorian locations including Croajingalong National Park to investigate local reports that ephiphytic and lithophytic orchids had been entirely destroyed by the fires of the previous March.

In Victoria there are only five non-terrestrial orchid species. *Dendrobium speciosum* and *D. striolatum* are lithophytes, often occurring together in colonies, above small creeks lined by a narrow strip of rainforest. They also occur in more open forests and on elevated rocky outcrops, for example, on Genoa Peak. Colonies consist of a small number of individual plants and are much more localized and scattered in distribution when compared with the same species in N.S.W. *Sarcochilus australis, S. falcatus,* and *Plectorrhiza tridentata* are epiphytes confined to rainforest creeks and river flats, and following one hundred years of land clearing, are now very restricted in distribution. *S. australis* occurs at points along the Great Dividing Range and is the only epiphyte found west of Melbourne, in the Otway Ranges. *S. falcatus* is particularly restricted, and now occurs in low numbers, mainly in association with Eastern Leatherwood (*Eucryphia moorei*) and Lilly Pilly (*Acmena smithii*) in the Howe Ranges.

On earlier visits to inspect these plants in 1981 we saw healthy populations of all five orchid species in flower and producing seed pods, despite extreme water stress following five years of drought. Open forest, and river and creek sides, were noted to contain a considerable accumulation of dead branches, twigs and decaying leaves.

The March fires were described by firefighters as uncontrollable, being very hot and fierce. They were fanned by strong winds and stoked by the heavy buildup of dry material. The effects were severe – death of trees and smaller growing species, regardless of fire resistance, and destruction of moss and lichen cover on rocks. The upper layers of soil also burned and have become partly eroded by follow-up rains. Unfortunately, habitat destruction continues for many months after a fire. As late as November 1983, on an afternoon of strong wind we heard the crash of several fire-damaged trees with a loosened grip on the soil.

Our long journey by four-wheel drive through blackened forest to the orchid sites, was indirect and tedious. The access tracks are rough at best in unburnt forest, and in August 1983 they were blocked by fallen trees every hundred yards or so. We stopped constantly to chainsaw and lift timber aside to make our way. In places a group of fallen trees required extensive clearing, so it was preferable to skirt around the debris and create a new track. The soil was unstable, with burnt-out stumps collapsing under tyres and under foot. So severe was the tree damage that some were only just starting to shoot from dormant buds in the trunk, five months after the fire. Dead trees had also fallen on to others, splintering their main limbs.

The ground was covered with an almost continuous mat of small *Eucalyptus* and *Acacia* seedlings, and some scattered large colonies of terrestrial orchids - *Diuris, Thelymitra, Microtis, Caladenia,* and *Pterostylis* species; some approaching flowering stage. When we finally reached the habitat of the orchids, the sites were unrecognizable. Charred remains of *D. speciosum* and *D. striolatum* lay under piles of fallen saplings and shrubs. The mat of moss and lichen which normally covers and protects their roots was completely burnt away, exposing a fibrous skeleton of dead roots running out from each plant for several feet. Fallen trees of all sizes choked the rainforest creek, few plants (mainly vines) showing signs of regeneration. A few patches remained unburnt where the fire had changed course or skipped over. Several hours in this bizarre landscape subdued the excitement and good humour which accompanies the search for orchids. Then followed a lift in spirits and a sense of relief when, to our delight, we began to spot surviving orchids and new green shoots around burnt plants.

The following is an account of the effects of the fires on the five orchid species, describing their regenerative and survival responses.

Sarcochilus australis *(Butterfly or Gunn's Orchid)*

Sarcochilus australis is confined to rainforest creek areas in well shaded parts of the tree canopy often only a few feet above the ground, and never far from running water. Individual plants are generally smaller than their counterparts in wetter areas such as the Otway Ranges (Vic.) and N.S.W. Five years of drought prior to the March 1983 fires had already reduced the population by about 80 per cent.

This orchid has little fire resistance because of its small water reserve, and it rarely survives if most of the fleshy leaves are burned. Where fire had burned into the rainforest creeks nearly all the plants were dead. In small pockets of unburnt creekside jungle, however, some plants survived; and in November a few mature plants were in full flower and setting pods. Regeneration of this species should occur by growth of seedlings from these pods. Destruction of many humidity-providing rain forest trees has exposed surviving plants to potentially lethal desiccation, until full regeneration of habitat occurs. Fortunately, incomplete burning along creeks has ensured that *S. australis* will survive in most, if not all, of its previous locations.

Sarcochilus falcatus (*Orange Blossom Orchid*)

Sarcochilus falcatus is now restricted in Victoria to the Howe Ranges, and to a small number of scattered plants in a few other rain forest areas. Clearing of natural habitat for farming and forestry has been the major reason for its decline. Bushfires have passed over or around the major localities of this most beautiful epiphyte on at least four occasions in the past ten years, and it is at risk of elimination from Victoria if an intense fire passes through its major site. We saw a very small number of plants along creeks which had suffered a fire of only moderate intensity. In November the plants were healthy and in flower, despite the considerable damage to host trees.

Plectorrhiza tridentata (*Tangle Orchid*)

Plectorrihiza tridentata is found in similar situations to those of *S. australis*; but its distribution in Victoria is more widespread, from Orbost to the N.S.W. border. It grows as an aerial plant, hanging by only a few roots attached to branches in the lower shaded parts of the rain forest, where humidity is high. Wherever the fire passed plants were quickly desiccated and very few survived. Fire caused great destruction of its habitat, including the major location of Mt Drummer, and in the Alfred National Park. Some patchy areas have been spared, and regeneration should occur from seeds providing that the pollinators (unknown) are still present.

Dendrobium striolatum (*Streaked Rock Orchid*)

Dendrobium striolatum is found in scattered sites from Nowa Nowa to the N.S.W. border and beyond. It is often densely adherent to large rocks along creeks, or on elevated rocky peaks in the path of humid air currents, for example, on Mt Everard and Genoa Peak. The fleshy cylindrical leaves provide some water storage and resistance to desiccation; but the plants are generally small, and there is little protection from a hot fire running along a creek. Large expanses of this orchid were burned to rock level in March 1983, and by August regeneration of small green-purple shoots was evident from dormant shoots at the base of the plants. These were growing rapidly by November, and seemed destined to regenerate most of the original plant mass within two to three years. Flowering and setting of pods was seen on unburned rocks and rock crevices where fire could not penetrate. Plants in these protected situations will ensure a supply of future seedlings. This species is unlikely to be eliminated by fire from any of its present locations.

Dendrobium speciosum (*Large Rock Orchid*)

Dendrobium speciosum is the largest Victorian orchid and occurs in small isolated colonies on exposed rocky outcrops. It is often found in *Eucalyptus* forest above rivers and creeks. These forests suffered severe damage in the March fires and *D. speciosum* took a real beating, despite its fire-resistant features of tough thick leaves and large water reserve in bulky pseudobulbs. In some sites every leaf and cane was burned to a charred stump; but only a few plants were killed outright and fell off their rocky substrate. Where plants were not burned, heat damage caused all leaves to drop, and pseudobulbs to shrink down to dry yellow canes half their original size. Many plants were burned right to the ground, giving rise to initial reports that they were all dead. However, a very small basal remnant of pseudobulb containing dormant buds survived and new shoots had begun to grow from these in July 1983. By November, some were 30 cm high, with three to four leaves, and whole plants originally of 30 to 60 canes were regenerating with up to 20 new canes in the initial growth phase. As a rough estimate, only about three years will be required to regenerate fairly mature plants capable of flowering. Even in severely burnt forest a few plants survived intact and flowered, setting pods in November. Apparently the natural pollinators (also unknown) were still present, despite burning of surrounding areas for some miles distant. Hence regeneration of *D. speciosum* after fire is both from basal shoots and from seed. We have observed very similar regeneration of *D. kingianum,* which occupies a parallel ecological position in N.S.W.

Discussion

The fire resistance of Australian epiphytes and lithophytes appears to have been underestimated. Fire has long been an integral part of the Australian climate, and orchids have survived catastrophic bushfires over the centuries. The fires of March 1983 were regarded as among the most destructive and intense within recorded history, yet our observations suggest that despite great damage, none of the five species is in danger of elimination from present locations. *Dendrobium speciosum* and *D. striolatum* have an amazing regenerative capacity from basal shoots, and also from seed. *Sarcochilus australis* and *Plectorrhiza tridentata*, which perished in great numbers, will probably regenerate by seed from plants in surviving pockets of rainforest. Pollinators also survived the fires, and set a good crop of capsules on flowering plants of all five species.

Distribution may contract markedly after fire, but will tend to expand again with future good seasons. Contrary to suggestions that plants would have to be brought in from other areas to replace those 'killed' by fire, there is absolutely no need to interfere with natural regeneration; which, we estimate,

HABITATS, BUSHFIRES AND REGENERATION IN VICTORIA, 1983.

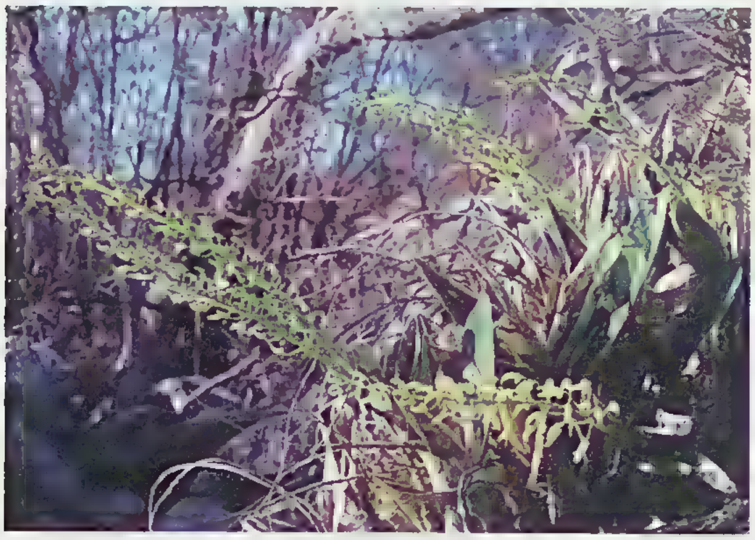


Fig 1 Dendrobium speciosum. Flowering and pod set occurred on this large plant which suffered only scorching of leaves. Surrounding forest (in background) was severely burned. (August 1983).

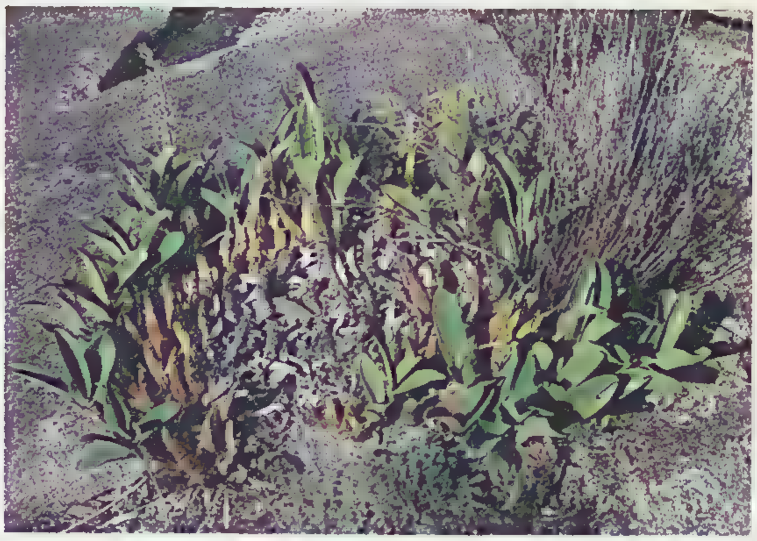


Fig 2 Dendrobium speciosum. Mature unburned plant in bud. (August 1983).

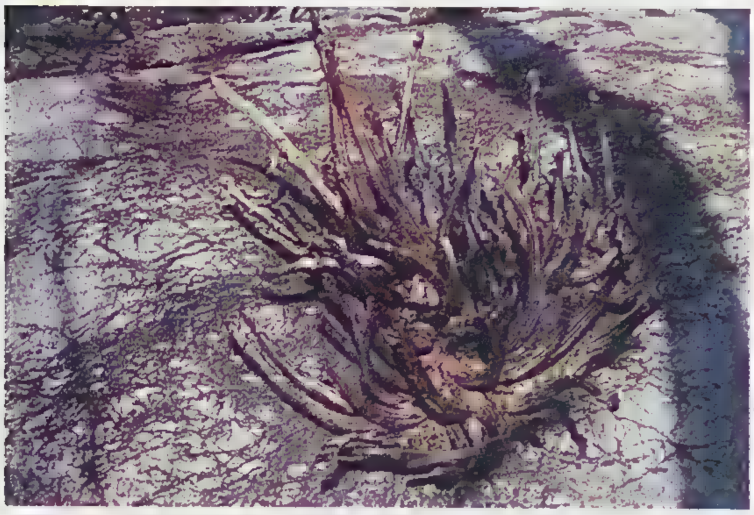


Fig 3 Dendrobium speciosum. Severely burned plant showing no sign of regeneration in August 1983. Note pattern of dead roots, revealed by burning of the moss and lichen cover on rocks.

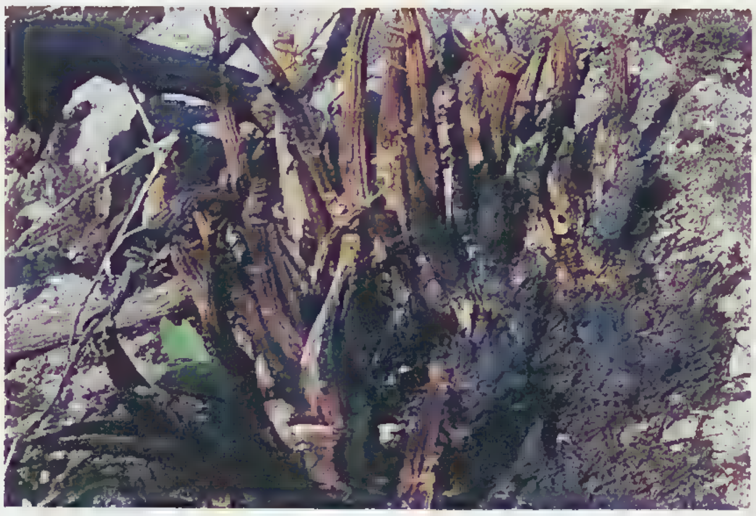


Fig 4 Dendrobium speciosum. Charring and desiccation of original canes; and several regenerating shoots. (August 1983).

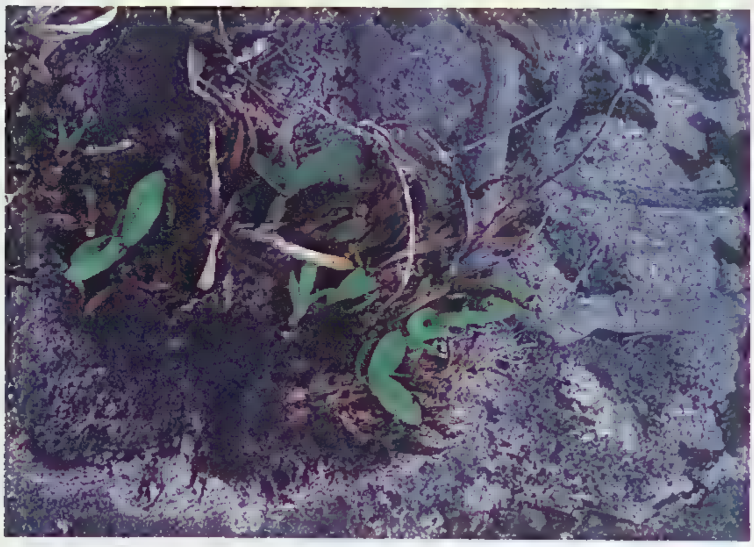


Fig 5 Dendrobium speciosum. Severely burned plant with rapidly growing regenerating shoots arising from all aspects (November 1983).

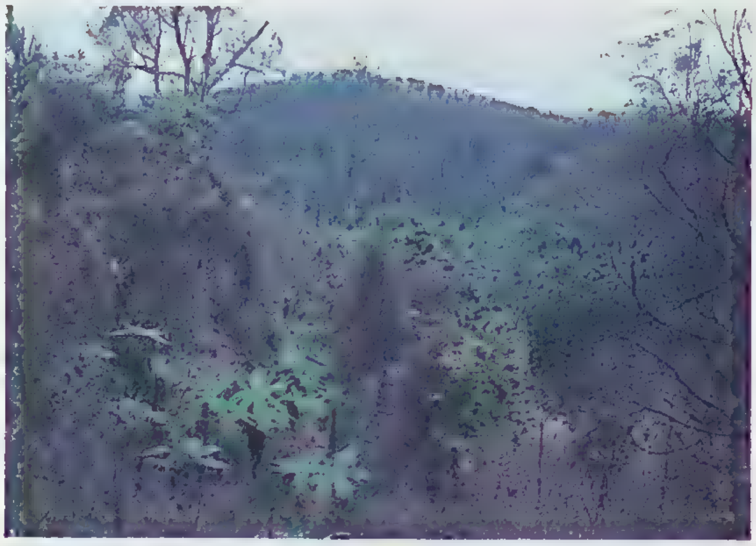


Fig 6 Mt Drummer. Severe destruction of rainforest habitat of ***Plectorrhiza tridentata.*** Regeneration of seedlings occurs from plants surviving in unburned patches of vegetation (background). (November 1983).

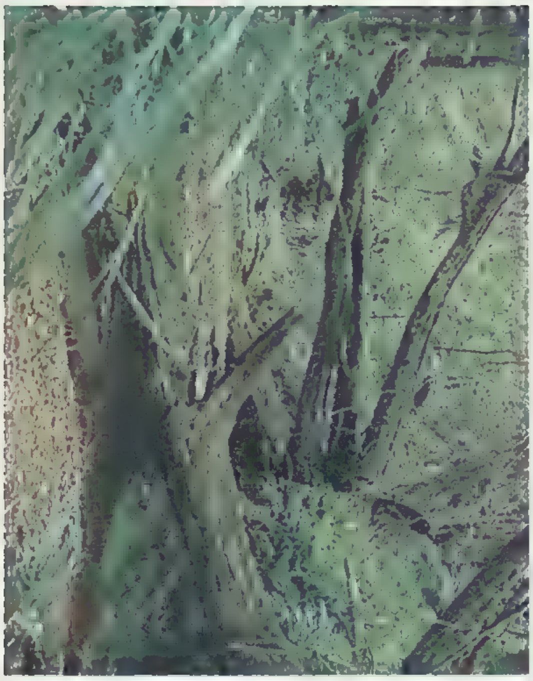
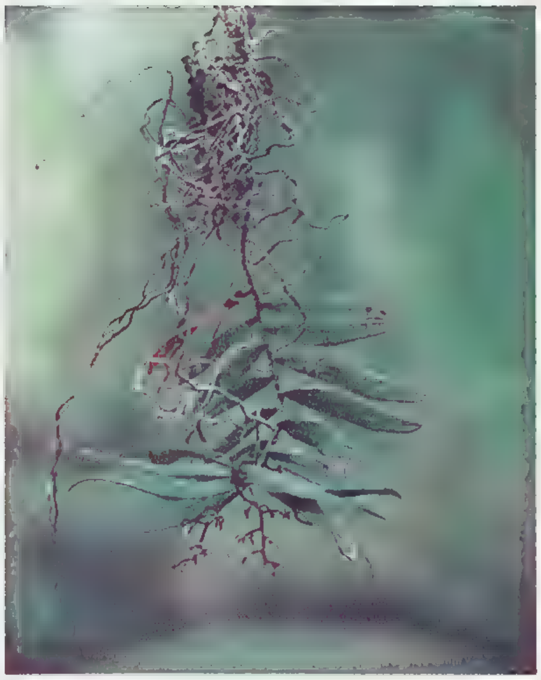


Fig 7 Rainforest Creek. Habitat of ***Sarcochilus falcatus, S. australis*** and ***Plectorrhiza tridentata.*** Many creeks in East Gippsland were badly burned by fires raging through accumulated debris. Photograph : D.M. Calder.

Fig 8 ***Plectorrhiza tridentata.*** An aerial plant with little resistance to fire.



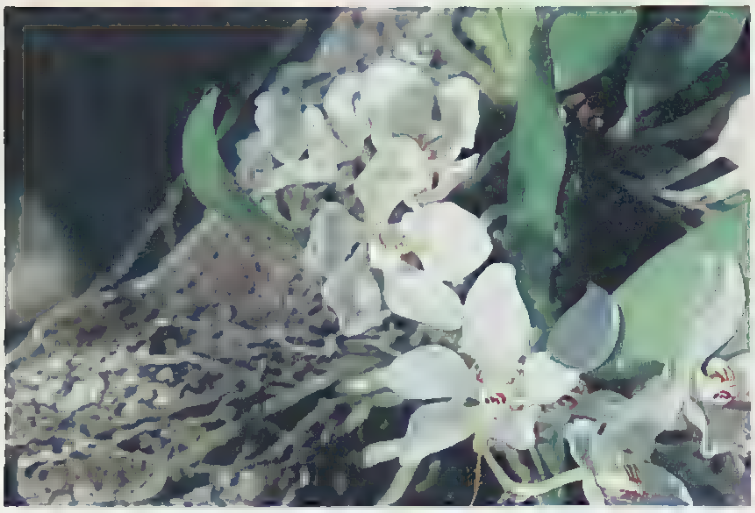


Fig 9 ***Sarcochilus falcatus.*** Localized, and at the southern limit of its range in eastern Victoria, this beautiful epiphyte has narrowly escaped several destructive fires in recent years. Two natural seedlings with white and purple marked labellums.

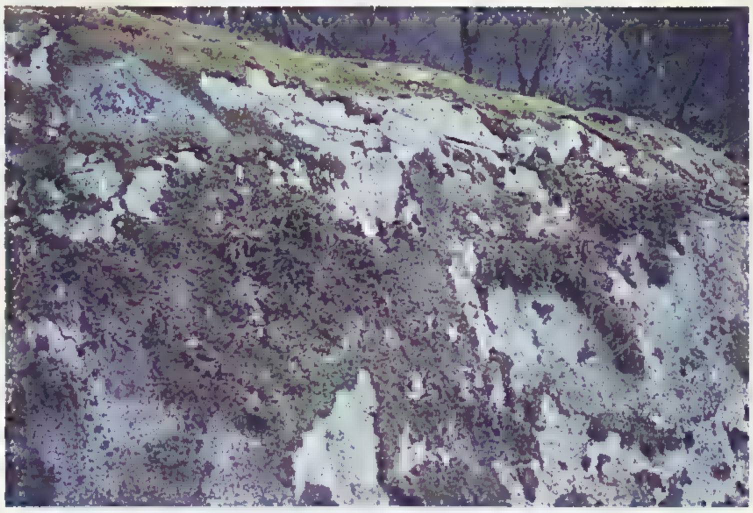


Fig 10 ***Dendrobium speciosum*** habitat. Rocks under dry Eucalyptus forest; damaged plants at centre. (August 1983).

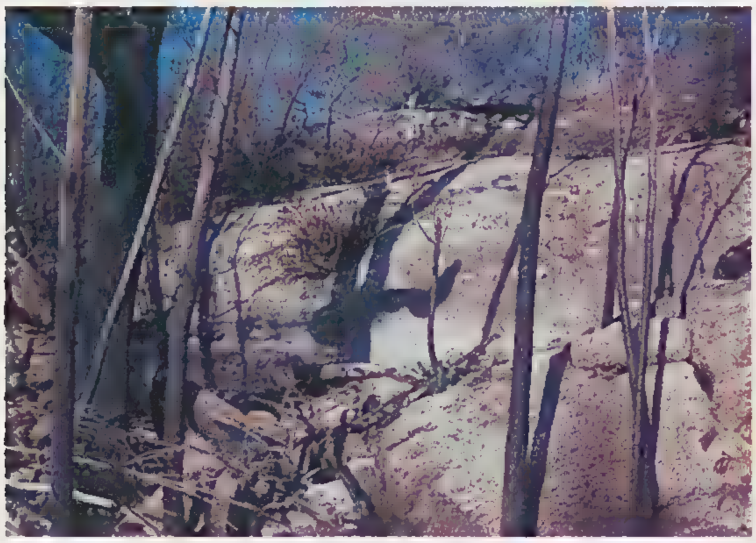


Fig 11 ***Dendrobium striolatum*** habitat. Large moss and lichen-covered rocks along creek, unburned where fire changed direction. Small clumps of ***D.striolatum*** are evident.

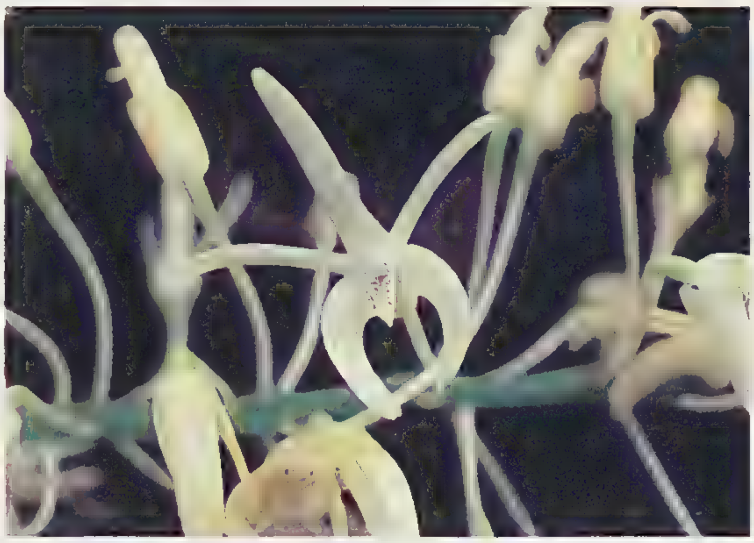


Fig 12 ***Dendrobium speciosum*** flower.

should return populations to pre-fire levels within a few years. The major requirement is to protect unstable burnt areas from excessive use by vehicles and walkers until plants and soils have restabilized. It seems clear that fire is much less destructive to habitat in the long run than is clearing for forestry, farming, and other purposes.

Acknowledgements

We are grateful for the generous assistance provided by staff of the National Parks Service (Croajingalong National Park) and Forestry Commission of Victoria.

References

Royal Society of Victoria, Proceedings, East Gippsland Symposium. Vol. 82, Part 1, 29th January 1969.

J.H. Willis. A Handbook to Plants In Victoria Vol. 1, Melbourne University Press 1962.

February 1984.

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(Reprinted from the NOSSA Journal, February 1984)

Effects of 'Ash Wednesday' bushfires on orchids in the Adelaide hills

by R. Bates

The fires that burned out hundreds of square kilometres of the hills near Adelaide in February, 1983 have been both beneficial and destructive to the orchid flora.

Fires have been a part of the scene for thousands of years. The aborigines used fire to flush game but they burned on calm days when there was still moisture enough to prevent a total conflagration. Lightning-strikes caused fires but these were on overcast days and the rain which fell afterwards was often enough to quell the fires.

The 'Ash Wednesday' bushfires were unusual in that they occurred after a record drought when soil moisture was negligible on a day of over 40°C temperature with gale-force winds. Consequently the fire gave a total burn of the surface leaf litter. In many areas the soil was sterilised up to 5cm below the surface and in peaty swamps and around tree stumps up to a metre or more. The tremendous heat destroyed all orchid tubers in some areas.

In Cleland Conservation Park it was noted that in some gullies with deep leaf litter no orchids whatsoever came up after the fire. Careful searching failed to reveal a single surviving plant of *Corybas dilatatus* and in the burnt areas *Pterostylis nana* and *Pt. pedunculata* had disappeared. Where there were once huge colonies of *Acianthus* there were, after the fire, just occasional survivors. In one swamp I had counted in 1981 over one hundred plants of *Prasophyllum australe*. After the fire just a dozen remained. Along the Mt Lofty Summit road, before the fire, each year it was possible to count scores of *Dipodium punctatum;* in the summer after the fire not one was located. Nevertheless in unburnt or slightly scorched areas there have been survivors and it is from these that the affected orchids will probably repopulate the park. Yet the effects of the fire were not all bad as anyone who visited the park in the spring of 1983 would have witnessed.

With rainfall well above average after the fires, orchids on the dry, rocky slopes and ridges really thrived. It seemed that every plant of *Diuris maculata* and *D. longifolia* flowered and the seed produced will ensure that these will be common in the years to come. Likewise with the spider orchids *Caladenia dilatata, C. leptochila* and *C. pusilla.* I had never seen *Caladenia deformis* in Cleland Park before but after the fire there they were in hundreds. Of course one effect of the fire was to remove all the undergrowth and allow the orchids to be visible from a distance; there was no need to go on hands and knees to spot them.

The fire provided the stimulus for some orchids which had not flowered for many years to bloom *en masse*. It was not possible to walk through many areas near Kuitpo without treading on *Lyperanthus nigricans* flowers and, judging by the huge seedpods, many billions of seeds must be produced. It was a similar story with *Caladenia menziesii*: some plants had up to four flowers and in one square metre I counted over 100 flowers.

We know that the nitrogen and phosphate available to the orchid increases fourfold after a fire but this cannot be the only reason for increased flowering as adding extra nutrients to plants in cultivation does not stimulate some to flower. Nor does the extra light available. So there must be some hormonal stimulus triggered by the fire; but what is it?

Below is a list of some orchids which exhibited-increased flowering in burnt areas and the appropriate amount of increase.

x 10	*Caladenia deformis*	x 5	*M. parviflora*
x 500	*C. menziesii*	x 2	*M. atrata*
x 10	*C. pusilla*	x 2	*Pterostylis nutans*
x 5	*C. rigida*	x 10	*Prasophyllum australe*
x 10	*Diuris brevifolia*	x 5000	*P. elatum*
x 10	*D. longifolia*	x 5000	*P. frenchii*
x 2	*D. maculata*	x 1000	*P. fuscum*
x 5	D. "Pioneer"	x 5	*P. patens*
x 5000	*Lyperanthus nigricans*	x 2	*Thelymitra aristata*
x 20	*Microtis unifolia*		

Other species showed increased flowering in some areas but not in others. For some orchids the increase in flowering peaks two to three years after a fire, i.e. *Thelymitras* which benefit from the increased light. It would seem that *Caladenia, Diuris, Lyperanthus, Microtis, Prasophyllum* and *Thelymitra* all benefit in the long term from occasional burns but that *Acianthus, Corybas* and *Pterostylis* must suffer.

February, 1984.

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CONSERVATION

Protection at last?

by Gerry Walsh

In September 1983, a small but significant round table conference took place between two potentially traditional opponents. Both sides share a common ultimate goal but they differ considerably concerning the methods that should be employed to achieve that goal. On one side was the Australasian Native Orchid Society, while on the other was the National Parks and Wildlife Service of N.S.W. ANOS was represented by the President, Norman Hilliger; the Secretary, Michael Harrison; *Orchadian* Editor, Joe Betts and myself. The N.P.W.S. was represented by Michael Brinsley and Fred Hersey.

As a result of an article I had written for the *Orchadian* (June 1983) I had received a letter from the Acting Chief Law Enforcement Officer of the N.P.W.S., Mr T. Alexander, requesting a meeting with me to discuss the article. I felt somewhat apprehensive as I sat in a sterile governmental waiting room ten storeys above Kent Street Sydney. My writing could hardly be described as 'waving a white flag' — more like thrusting a 'red rag at a bull'. It was with some relief, and a high degree of surprise, that I learned that I had not been summoned to receive a flogging for preaching subversion. Instead, my views were accepted.

The N.P.W.S. informed me that they were reviewing protected plant legislation and that my "comments were very timely". I suggested to Mr Alexander that it would be greatly beneficial to arrange a proper meeting with representatives from the N.P.W.S. and ANOS both present. Each party could then present their respective opinions and feelings for mutual consideration. So a meeting was arranged.

Essentially, discussion centred upon what ANOS believed should be done, while the N.P.W.S. continuously explained why it could not be done. Broadly speaking, the N.P.W.S. does not have the power (in the legal sense) to introduce the bans and limitations that ANOS believes are paramount for successful and effective native orchid protection. They were equally insistent that lack of finance, and corresponding inadequate staffing levels, made investigation into the bona fides of licence applicants, and the detection and prosecution of offenders, virtually impossible. Interstate trade was also discussed, with particular mention being made of that infamous commercial "chain store" that knowingly encourages orchid pillage, supposedly from interstate sources. It seems that Section 92 of the Australian Constitution, which provides for interstate free trade, has an overriding and limiting effect on State laws, including those of the N.P.W.S. of New South Wales.

But did anything concrete come out of this debate? The answer is yes, or at least we extracted a promise for concrete action in the future. A list of endangered species of native orchids was prepared, ranked according to how threatened they were. This list had the approval of ANOS Council. Reproduced below is Group One from that list — containing the most endangered N.S.W. species.

THREATENED NATIVE ORCHIDS /Sept., 1983.

The native orchid species listed hereunder are considered by the Australasian Native Orchid Society (ANOS) to be in urgent need of total protection. An absolute ban on the collection from 'wild' sources, and a total ban on wholesaling and retailing, should be favourably considered by the National Parks and Wildlife Service with regard to these species. It is envisaged seeding plants of these same species shall be permitted to be sold provided that they were grown from seed under laboratory or nursery conditions, and provided that such conditions can be unquestionably proven to be the source of those same species plants.

GROUP ONE:

Sarcochilus fitzgeraldii

Only occurs as a lithophyte on cliffs and boulders in gorges and ravines of an excessively rugged nature. This species does not suffer any damage at all as a consequence of forestry or agricultural pursuits. It occurs from the border ranges south to the Macleay Valley and is very rare in the southern parts of its range. **Status:** already quite rare and quickly disappearing.

Sarcochilus hartmannii

Only occurs as a lithophyte on exposed cliffs and rock faces and, more often than not, on the very face of such locations. It occurs from the border ranges south to the Hastings Valley and it is very rare in the southern parts of its range. This species suffers **no damage at all** as a result of forestry or agricultural pursuits. **Status:** now quite rare and very sporadic in distribution.

Sarcochilus ceciliae

Only occurs as a lithophyte on cliffs, rock faces and boulders in exposed situations from Queensland to the Hastings Valley and is virtually non-existent in the southern parts of its range. It **does not** suffer any damage whatsoever because of forestry or agricultural operations. **Status:** now quite uncommon and has been wiped out over much of its former territory.

Dendrobium falcorostrum

The Antarctic Beech tree, *Nothofagus moorei*, is virtually the sole host species for this very specialised native orchid. The Antarctic Beech itself is a rare tree and only grows at altitudes exceeding 1500 metres, in about a dozen localities, from the border ranges south to the Barrington Tops. The Antarctic Beech **is not a commercial species,** yet vast quantities of *D. falcorostrum* find their way into nurseries. This orchid is in imminent danger unless quickly protected.

At the initial solo meeting, and the meeting at which ANOS was present, I suggested that the only way to protect Group One plants was for the Head Office of the N.P.W.S. to issue directives to its Regional Offices (where licences are approved) that they refuse to issue licences to applicants who list any of these four species on an application form

It was agreed, eventually, that this would be a sensible policy to adopt. The N.P.W.S. stated that they did not have the legal ammunition to enforce that policy. This may or may not be correct. However, they did agree to take that course of action, regardless. And they gave ANOS an undertaking that they would give this policy some teeth by incorporating it into their planning for revised legislation. Unfortunately, to make it 'strictly legal' it must be pushed through a mile of red tape — the Act of Parliament governing the N.P.W.S. must be changed. This is not one of the easiest things to do. It will, of course, take years. But we must begin somewhere. And so here at last is that start!

ANOS has now reached a milestone of some significance. But could this be my opinion only? It may well be. I have recorded the general theme of that first official meeting here so that members are kept informed of the events which will concern them, in some way, in the future. And if, in two or three years time, nothing comes out of the N.P.W.S. promise, hopefully Sydney members will be spurred on to ask: "Why has nothing been done about it?" Hopefully, it will not slip into oblivion like so many of our poor old native orchids.

— Reprinted from *the Orchidophile*
March, 1984 by permission of the Editor and Author.

AUSTRALIAN NATIVE ORCHID HYBRIDS

(New registrations by the RHS — from lists in the Orchid Review, March and April, 1984)

NAME	PARENTAGE	REGISTERED BY
DENDROBIUM		
Fiona Banks	Aussie Freckles x *kingianum*	D. Banks
Kathryn Banks	Ellen × *kingianum*	D. Banks
Kevin Banks	*delicatum* x *adae*	D. Banks
Maron	*dicuphum* x *tetragonum*	R. Haylock
Aussie Bounty	Bardo Rose x *falcorostrum*	P. Spence Orchid Products
Aussie Delight	Eureka x Gracious Falcon	P. Spence Orchid Products
Aussie Frontier	Aussie Gypsy x *speciosum*	P. Spence Orchid Products
Aussie Gypsy	Hastings x *ruppianum*	P. Spence Orchid Products
Aussie Love	Eureka x *delicatum*	P. Spence Orchid Products
Aussie Majestic	Aussie Freckles x *falcorostrum*	P. Spence Orchid Products
Aussie Pride	Eureka x Bardo Rose	P. Spence, Orchid Products
Aussie Spice	*falcorostrum* x Hastings	P. Spence, Orchid Products
Johulatum	*undulatum* (i.e. *discolor*) x *johannis*	M. Korsman
Kalang	Sunglow x Gracious Falcon	C.J. Brandon
Karloo	*speciosum* x Gracious Falcon	C.J. Brandon
Stephen	*beckleri* x *striolatum*	W. Skillicorn
SARCOCHILUS		
Aussie Weinman	Weinhart x *hartmannii*	P. Spence, Orchid Products
SARCONOPSIS		
Aussie Jem	*Phal. amabilis* x *Sarco. ceciliae*	P. Spence, Orchid Products

Footnote: The name "Aussie Jem" is not a typographic error but is as printed in the *Orchid Review* for April, 1984. We have, as yet, no data on the horticultural merits of any of these hybrids but such data would be welcomed by some of our readers.

Sarcochilus fitzgeraldii — How to cultivate

by Gerry Walsh (in the *Orchidophile*)

My cultural methods are neither radical nor wildly successful. I mount on cork and hardwook and my potting mix is fairly standard; although I have started using the mixture advocated by David Banks: pea-sized gravel and pinebark (no charcoal). I have seen the results of this and I am now a convert. But I have come up with a way of growing *Sarcochilus fitzgeraldii* that has so far proved spectacular.

Last Spring I came into the possession of a very large specimen of *Dicksonia antarctica*, the soft treefern. Its base was around 70 cm wide and the height exceeded two metres. It came from private property on the South Coast of N.S.W. — a victim of the logging industry. It was so heavy it had to be cut into four sections to get it home. The head was planted and is now growing along nicely. I cut the base into slabs and soaked them in limewater to reduce the acidity, thus securing some valuable mounts.

Before slabbing the base I cut 2 'rounds' from the very bottom, these being 15 cm in depth and around 60 cm in diameter. I then scooped out the tope of them and created two oversized treefern saucers. At the shallowest point, the base was now around 5 cm thick.

Into the cavity I placed a mix of fine pinebark, broken pieces of brick and charcoal. The broken brick I used for no other reason than its instant availability. This mix is quite open and drains readily.

The treefern fibre, however, holds moisture very well. In fact it never dries out and it is to this factor that I attribute my success. The large area of fibre creates a constant stream of humid air, thus providing very well the most important single component for the successful cultivation of *S. fitzgeraldii* i.e. humidity without wet feet. This is especially good in Summer when high temperatures tend to dry out most potting mixes in no time. This humidity also aids in keeping the atmosphere around the plants at lower temperatures. *S. fitzgeraldii* does not do well once the temperature rises above the mid 30's (C°).

After 3 — 4 months I could not resist the temptation to remove some of the larger chunks of potting mix to have a look at the condition of the root system. I was amazed! Big white roots had run rampant in all directions and were clinging to the mix — particularly the broken pieces of brick. Some of the roots had attached to the treefern fibre and even penetrated into it in some places.

This type of cultivation does have one drawback. If I want to take it to a show or a meeting it may prove very cumbersome. But this is more than offset by the beautiful aesthetic appearance of the whole thing. The entire surface of the outer 'pot' is green with miniature ferns in their gametophytic stage of development, which once again attests to the high humidity level.

It seems an appropriate time for me to make some recommendations to those intending growers of *S. fitzgeraldii*. When you purchase your plants select, if possible, the smaller plants growing in clump formation. A clump of small plants will take off far quicker than a single large specimen plant. This has been true in my-experience anyway — learned the hard way of course.

The 1984 Autumn Show (Sydney Group)

Prior to the staging of our 1984 Autumn Show, disquieting noises were heard emanating from some of our more pessimistic members, predicting a flop, a complete disaster. Ah, but the faithful knew that the key to success is persistence and Sydney Group is endowed with that quality. And what a show it turned out to be. Of course, it could not match the bulk of a typical spring show, but what was lacking in quantity was certainly made up in quality.

Sydney Group is indebted to those members of ANOS Wollongong Group and ANOS Central Coast Group who attended and participated in the Autumn Show. Ron Wheeldon, President of Wollongong Group, gave everyone a lesson in the culture and presentation of *Dendrobium bigibbum*, and in the process took out first and second prizes in that section. Anton van Bysterveld also from Wollongong Group, produced a couple of lovely *D. X superbiens*, one of which was awarded Champion Hybrid of the Show — *D. X superbiens 'Pauline'*. He also benched a beautiful *D. nindii*. Representing ANOS Central Coast Group, President Laurie Jarvis benched a couple of superbly grown plants of what is, to my mind, one of the most striking native orchid hybrids ever produced — *D. johannis* X *D. bigibbum var. compactum* — dark claret flowers borne prolifically on arching racemes up to half a metre in length. Also of special note in the *D. bigibbum* parentage hybrid section were Don Barnham's perennial *D. bigibbum var. venosum* which really is a super plant, and a seedling *D. Peewee* benched by Wal Upton which had a single large flat claret flower nearly 10 cm tall. I would like to see this plant when it has grown up!

Champion Species Orchid of the Show was awarded to *Pterostylis grandiflora*, exhibited by our own Jim Lykos. Beautifully displayed in a group planting were eight lovely flowers, averaging about 350 mm tall. From a field of over thirty entries, Jim also took out second prize in the *Pterostylis* Section with a pot of *P. fischii*. The Other Terrestrials-Section really was a mixed bag, with such orchids as *Arthrochilus irritabilis* and *Acianthus exsertus* benched alongside *Malaxis fimbriata* and *Spathoglottis plicata*. The judges finally decided on the smallest plant in the show for first prize, *Prasophyllum trifidum*, owned by Brex Butler.

A lovely specimen plant of *Dendrobium bracteosum* owned by David Lee took honours in the New Guinea Species Section and in the Other Epiphytic Species Section, *Bulbophyllum macphersonii* var. *spathulatum* and *Oberonia palmicola* both by Mike Harrison, were the pick of the bunch.

A couple of plants of *D. schneiderae* var. *major* adorned the Other *Dendrobiums* Section which was eventually won by the previously mentioned *D. nindii*. These plants displayed their characteristic long arching inflorescences with the flowers clustered along the distal third and, of course, the robust vegetative nature of this variety sets it apart from its more diminutive counterpart from the border ranges.

In the final analysis, the show was an even greater success than the organisers had dared to hope for. Our relatively modest publicity campaign paid dividends and public attendance was very pleasing. The Plant Sales Table was also well patronised and by the end of the day was almost exhausted. The most important result, however, is that we have proven to ourselves that an annual Autumn Show is most definitely worthwhile and, like a good orchid, will only improve with age. In 1985, the show will be even bigger and better and I, for one, cannot wait.

by Mike Harrison

(Reprinted from The Orchidophile, May 1984.)

• A Circular Letter from the AOF Seed Bank Curator

On 24 February, 1984, Graeme Banks, Curator of the Seed Bank informed all ANOS Groups and Affiliates that he had received a parcel of terrestrial orchid tubers from the National Botanic Gardens — these being surplus after repotting their terrestrial collection. It was suggested that these be distributed to interested groups in Australia for cultivation or re-establishment in the wild.

Accordingly two or three samples of 6 — 7 tubers were distributed from the Seed Bank to the 14 Groups/Societies listed in *The Orchadian* for September, 1983 and appropriate records were kept. It is expected that this dispersal will be the first of an annual event — varying the species sent with each allocation.

A further point from Graeme Banks's letter is quoted below:

"In the letter the Gardens states 'another reason for writing is to request your assistance in the preparation of an experiment on the germination of *Pterostylis* species which we hope to carry out later in the year. The experiment will involve a detailed study of the relationship between *Pterostylis* species and the germination specificities of their associated fungal isolates. The species to be investigated are as follows:— *P. baptistii, P. coccinea, P. curta, P. cycnocephala, P. nana, P. nutans, P. obtusa, P. pedoglossa, P. pedunculata, P. scabra* var *robusta, P. vittata, P. biseta* var *despectans, P. boormanii, P. daintreana, P. fischii, P. hamata, P. mitchellii, P. revoluta, P. rufa, P. barbata, P. plumosa*, and *P. reourva*.

Unfortunately we do not have sufficient supplies of fresh seed available of these species for the requirements of the experiment. Any assistance you or your members could give us in obtaining supplies of seed will be greatly appreciated.

It will be to the benefit of Australian terrestrial orchids as a whole for work to be undertaken by the Gardens in the area outlined so assistance from your Group/Society in arranging for supplies of seed later in the year will be welcome. Seed could be sent to this address for on-forwarding to the Gardens. Samples should record the species, its collection point and date of collection."

Graeme Banks
183 Windsor Road, Northmead, 2152.

IRA BUTLER TROPHY COMMITTEE
RULES FOR THE 1984 COMPETITION

(a) Bronze Plaques

Every entry which conforms to the following requirement will receive an Ira Butler Trophy (Bronze plaque):

The entry must have been judged Best or Champion Australian Native Orchid Hybrid during a Winter or Spring Show conducted during 1984 by either: a State Orchid Society or an ANOS Group.

(b) Silver Plaque for
The 1984 Australian Native Orchid Hybrid of the Year

A silver plaque is presented to the winning entry providing:

1. The entered plant complies with the requirements for the Ira Butler Trophy, or
2. Any Orchid Society which is constituted to grant awards may submit entries during the course of the year — 1984.

All entries must conform to the following requirements:—

1. A minimum of three (3) 35 mm colour transparencies showing (i) front view of the entire plant, (ii) front view or the flower, (iii) side view of the flower.
2. Name of the plant's owner, and owner's address.
3. Name of the Society or ANOS Group submitting the entry.
4. Size measurements across the visible limits of an individual flower.
5. The hybrid need not necessarily have been created by the owner.
6. Entries must be submitted on a properly completed entry form as supplied by the Committee.
7. All entries must be received by the Ira Butler Trophy Committee by 15th November, 1984. C/- The Chairman, 45 Tryon Road, Lindfield, N.S.W.
8. The judges' decision is final and no correspondence will be entered into.
9. Failure to comply with these rules will eliminate the entry from the judging of the Ira Butler Australian Native Orchid Hybrid of the Year Competition for 1984.
10. Plant nomenclature must be that which is detailed in the latest edition of "A Checklist of Australian Native-Orchid Hybrids", published by the Australasian Native Orchid Society, and updated by registrations which appear in *The Orchadian* each quarter.

John Stuart
Chairman of Committee

Bromheadia pulchra Schltr in Australia and New Guinea

by P.S. Lavarack*
M.A. Clements**
N.H.S. Howcroft***

Summary

***Bromheadia pulchra* Schltr is shown to be the correct name for the species previously known in Australia as *B. venusta* T.E. Hunt. A comparison of *B. pulchra* and *B. finlaysoniana* (Lindley) Miq. is made to confirm that the two are distinct.**

Introduction

In the Australian Orchid Review for September 1953 T.E. Hunt described a new species *Bromheadia venusta* from Cape York Peninsula. The type specimen was collected near Weipa by Dr J.H. Barnes. It was claimed by Hunt to be the first collection of the genus *Bromheadia* in Australia, but in this he erred, there being an earlier collection in the National Herbarium, Melbourne. This latter specimen was collected by Mrs Rowan, the well-known flower painter, in 1891 near Cape York, the sheet being annotated by Rudolf Schlechter as follows: "This is most interesting! A new genus for Australia, *Bromheadia* most probably *B. palustris*". There is no date on this handwritten note but it would be safe to assume that it was written in January, 1903, the only occasion on which Schlechter visited Melbourne (Loesener, 1926). This specimen was recorded in the Victorian Naturalist (Ewart 1907) as *Bromheadia palustris*, but has been overlooked for more than 60 years.

B. pulchra Schltr has until now been regarded as a superfluous name for *B. finalysoniana* (Lindley) Miq., a species found in the Malay-Peninsula, Borneo and Sumatra areas. It is apparent that *B. venusta* is very similar to *B. finlaysoniana* although Hunt made no comment on this, comparing his species only with *B. pulchra* Schltr from New Guinea. The present authors were able to compare material from Cape York Peninsula, including the presumed holotype of *B. venusta* with the holotype and isotype of *B. finlaysoniana*, a syntype of *B. pulchra* and live material of *B. pulchra* in New Guinea. All three species are virtually indistinguishable vegetatively but some differences in the flower were noted.

As a result of these comparisons, the present authors have come to the conclusion that *B. venusta* and *B. pulchra* are conspecific; the latter being the older name, now becomes the correct name for the Australian species and that this species is distinct from *B. finlaysoniana*.

Comparison of *B. pulchra* with *B. finlaysoniana*.

Because of the similarities between *B. pulchra* and *B. finlaysoniana* it was necessary to establish if indeed the two were distinct species. Flowers of each were reconstituted in ammonia, dissected and examined under a microscope. The results of this are shown in Figure 1. Clearly there are important differences in the shape of the floral parts with *B. finlaysoniana* being consistently larger. The column is longer and more slender in *B. finlaysoniana*. The floral segments in *B. pulchra* are shorter and broader. The calli on the lip also differ, there being a cluster of small calli near the apex in *B. finlaysoniana* while *B. pulchra* has large warty calli, including one that is larger and more prominent. The flowers of *B. pulchra* are cup-shaped, not opening fully while those of *B. finlaysoniana* open fully. Flower colour is also different: *B. finlaysoniana* has sepals and petals predominantly white, occasionally pink near the base of the outer surface of the sepals; lip white or pink with a yellow callus and purple venations on side lobes; column white or slightly green. *B. pulchra* has sepals which are pink to purple on the outer surface and cream-white on the inner surface; petals are cream-white; lip is yellow with white margins; column cream-white.

There appears to be no significant difference vegetatively.

Comparison of *B. pulchra* and *B. venusta*

Hunt, (1953), gave a table showing the supposed differences between *B. venusta* and *B. pulchra*. He did not have the opportunity of studying material of *B. pulchra* and also had only a limited amount of material of *B. venusta* at his disposal. He cited differences in size of the leaves and floral parts. However, it is clear that his specimen of *B. venusta* was rather small — possibly the flower was not fully open or possibly it had shrunk on drying. Whatever the reason, an examination of material from Cape York shows that the floral segments are all somewhat larger than those quoted by Hunt. A second difference lies in the shape of the various parts and here the quoted differences are not apparent to the present authors. The apparent differences may well have originated in confusion over terminology. One character which has been looked at in some detail by the present authors is the shape of the lateral lobes of the labellum. Both Hunt and Dockrill, in their illustrations, (see Fig. 2) show acute lateral lobes, but an investigation of flowers from several Cape York specimens has revealed consistently rounded or obtuse lateral lobes. This may be due to natural variation, but is more likely due to an incomplete flattening of the specimen under consideration by original authors. Whatever the reason, it seems the supposed differences of shape are of dubious taxonomic value.

The colour of the flower of the Australian plants agrees well with that of the New Guinea plants i.e. white petals, sepals which are white on the front and purple on the back and a sulphur-yellow lip.

Schlechter (1911-1914) describes the habitat of the New Guinea specimen as follows: "in humus at the edge of forests near Adolfhafen, alt. C. 10m." and "on more open slopes of the mountain forests near Jaduna, alt. C. 50m." Both specimens were flowering in April. J.J. Smith (1909) describes the habitat thus; "Hinterland of Hollandia, alt. C. 300m, together with grass and bushes, on a dune with sand mixed with a layer of humus covering a lateritic iron (layer)".

On Cape York Peninsula this species is

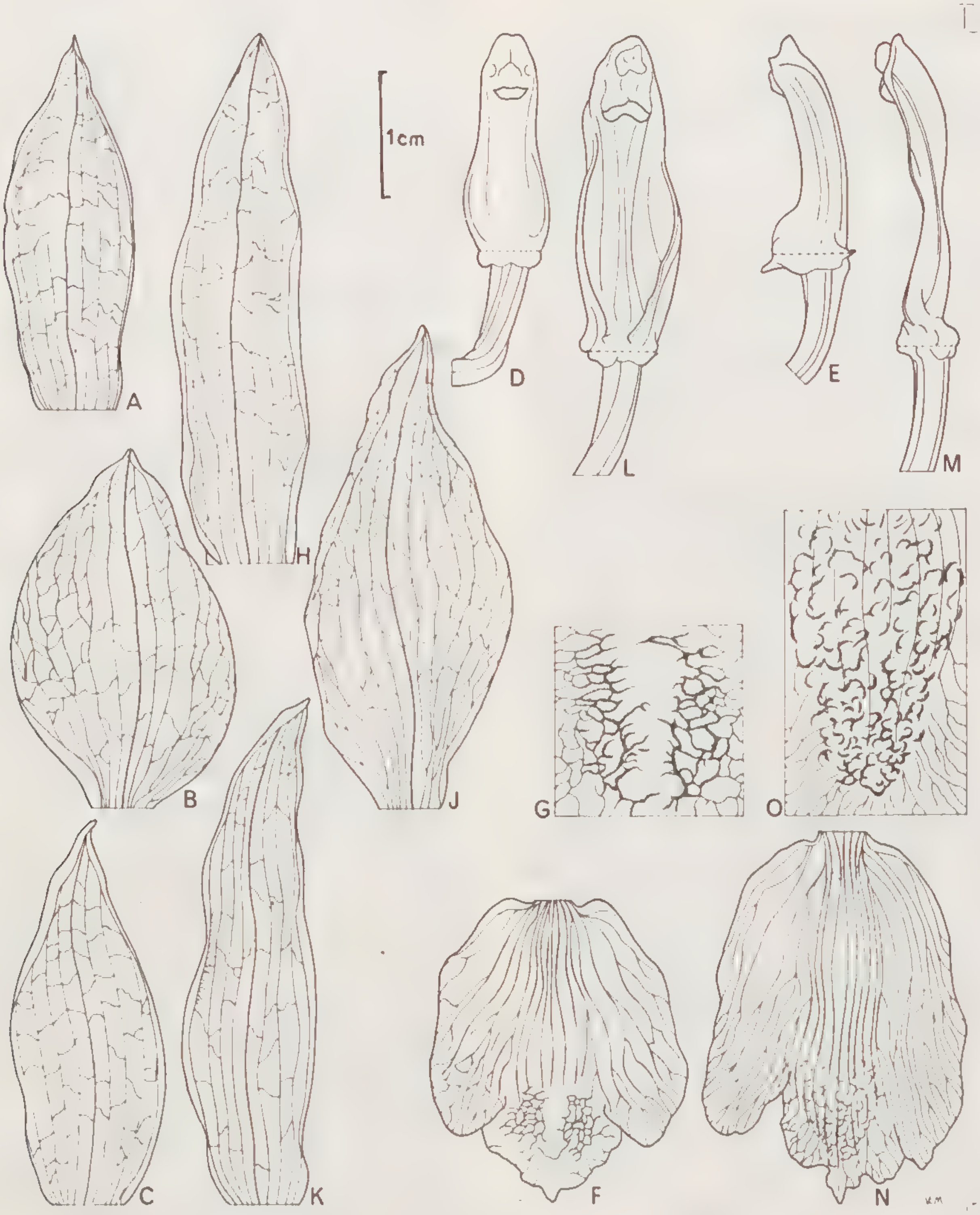


Figure 1. Floral parts of *B. pulchra* (A-G) and *B. finlaysoniana* *(H-O).

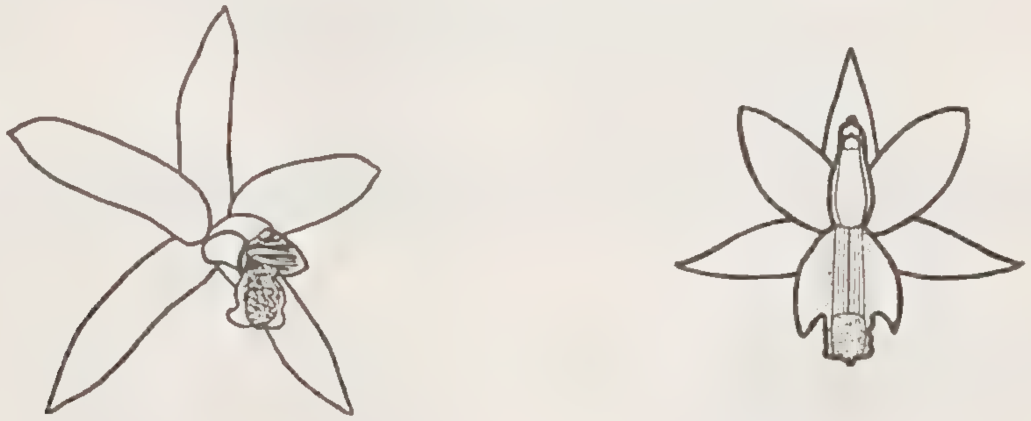
A, H. Dorsal sepal
B, J. Petal
C, K. Lateral sepal
D-E, L-M. Column
F, N. Lip (flattened)
G, O. Callus on lip

All to indicated scale, except G and O to scale × 2.

widespread north of about Coen in areas of impeded drainage usually in peaty conditions in swamps in sandy soil. It appears to flower spasmodically throughout the year with a concentration during the period of January to June.

Schlechter considered that Smith's *B. palustris* var. *papuana* was probably synonymous with his *B. pulchra*. He also maintained that *B. pulchra* was entirely different from *B. finlaysoniana*, citing the shape of the labellum and flower colour. J.J. Smith (1914) was by no means convinced that Schlechter was correct in this latter opinion, but grudgingly agreed, stating "I am still of the opinion that they are varieties (of one another). I hope that I will have the opportunity to compare live material of the two". Indeed, a study of live material of *B. pulchra* and *B. finlaysoniana* would still be useul. The present authors prefer to keep these species separate. The reasons for this are based on the shape of the segments of the flower, the overall aspect of the flower and the colour.

Bromheadia pulchra Schltr., Repert. Spec.

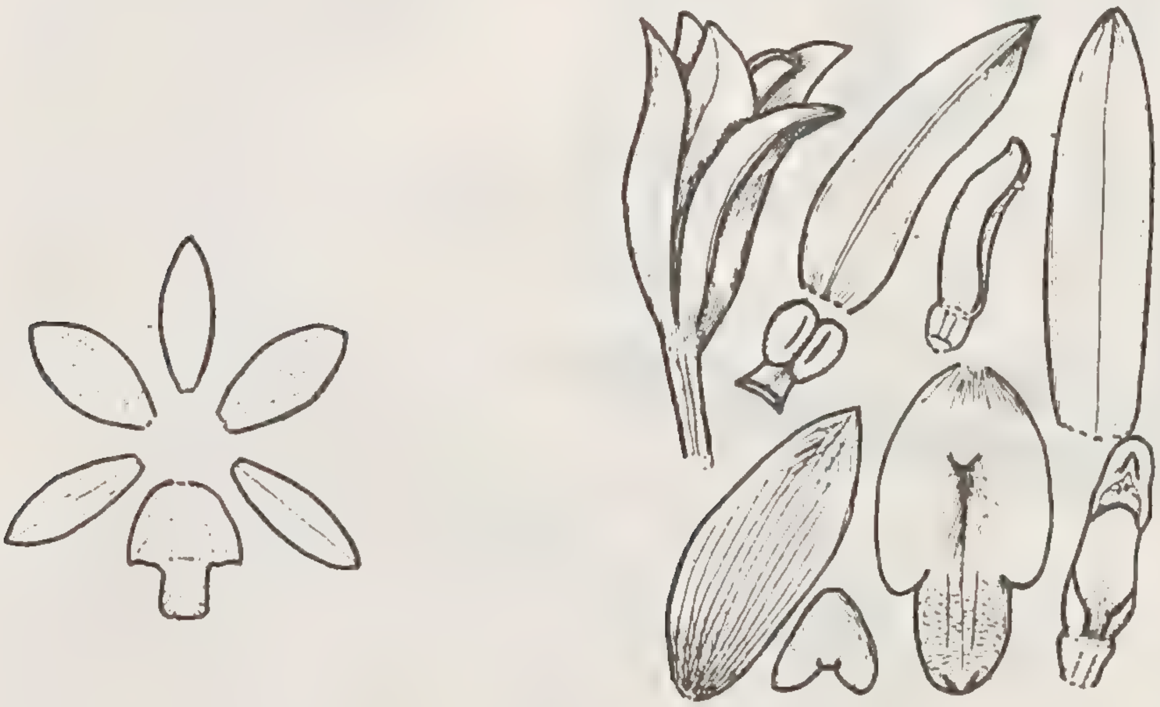


(a) *Bromheadia finlaysoniana*

(from Flora of Malaya by Holttum)

(b) *Bromheadia venusta*

(from Aust. Indig. Orchids by Dockrill)



(c) *Bromheadia venusta*

(from Aust. Orchid Rev. by T.E. Hunt)

(d) *Bromheadia pulchra*

(from Schelechter's Figure Atlas)

Figure 2. Some illustrations of *B. pulchra*, *B. venusta* and *B. finlaysoniana*. Note particularly the apparent difference in lip shape between (b), (c) and (d) all of which are now referable to *B. pulchra*.

Nov. Regni Veg. Beih. **1.** 367 (1912) and ibid **21**: t.132 no. 493 (1923-28).

B. palustris Lindl. var. *papuana* J.J. Smith, Nova Guinea **8** (1):26, (1909) and ibid **12** (3):215 (1914).

B. venusta T.E. Hunt, Austral. Orchid Rev. 18:101 (1953); Dockrill, Austral. Indig. Orch. 1:644-645 (1969). *Syn. nov.*

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References:

Ewart, A.J. (1907). New or rare plants in the National Herbarium, Melbourne. Vic. Nat. **24**:13.

Hunt, T.E. (1953). *Bromheadia)* Lindl.) A new Genus for Australia. Aust. Orchid Rev. **18**:101.

Lindley, J. (1833). "Genera and species of Orchidaceous Plants." Part III Vandeae. Ridgeways, London.

——— (1841). Botanical Reg: Miscelleneous Notices **184**:89-90.

Loesener, T. (1926). Rudolf Schlechter's Leben und Wirken. Notizbl. Bot. Gart. Berlin-Dahlem, **9**:932.

Schlechter, R. (1911-1914). Die Orchidaceen von Deutsch Neu Guinea. Repert. Spec. Nov. Regni. Veg. Beih. **1** (from "The Orchidaceae of German New Guinea" English Translation by R.S. Rogers, H.J. Katz and J.T. Simmons. ed. D. Blaxell. Australian Orchid Foundation. 1982).

Smith, J.J. (1909). Orchidaceae. Nova Guinea **8** (1):26.

——— (1914). Orchidaceae. Nova Guinea **12** (3):215.

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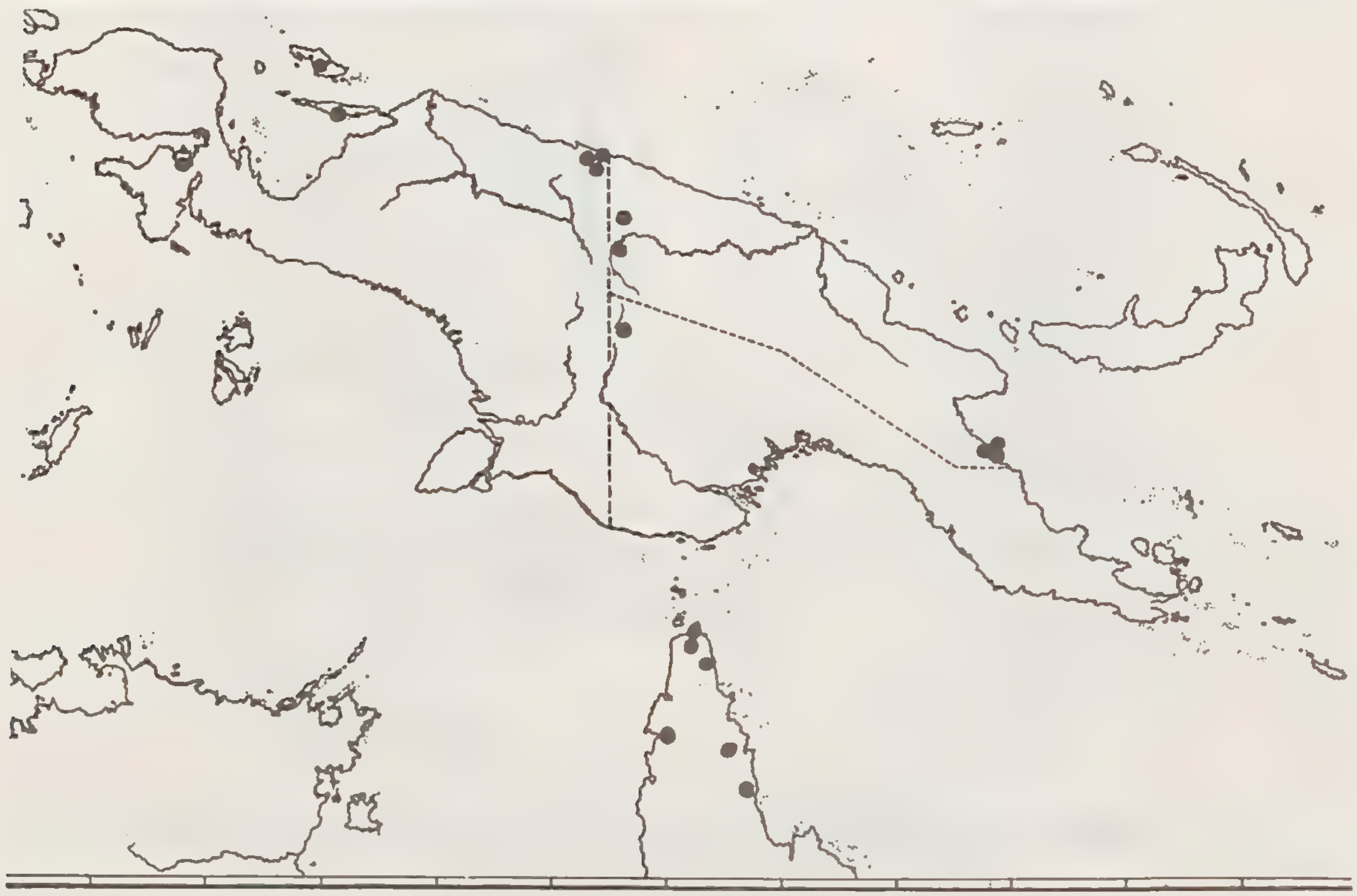

Fig 3 Confirmed localities of ***Bromheadia pulchra*** Schltr.

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This index lists authors, articles, subjects and species in simple alphabetical order.

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Numerals in bold face indicate an illustrated species.

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